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ON

INJURIES OF THE DIAPHRAGM.

WITH SPECIAL REFERENCE TO ABDOMINO-THORACIC WOUNDS.*

Delivered before the Royal College of Surgeons of England

BY C. W. GORDON BRYAN, *M.C.*, F.R.C.S. ENG.,

SURGEON TO OUT-PATIENTS (ADDITIONAL) AND ORTHOPÆDIC SURGEON, ST. MARY'S HOSPITAL; HUNTERIAN PROFESSOR, ROYAL COLLEGE OF SURGEONS OF ENGLAND.

INJURIES of the diaphragm are of consequence partly on account of the important physiological functions in which the muscle is engaged, partly because of its close anatomical relationship to important viscera of the abdomen and thorax. The effects of such injuries have been met with much more commonly in recent years, and the reasons for this are clear; street accidents, so frequent in these days of motor transport, are responsible for most of the cases seen in civil life, and the great war, and the numerous smaller wars that have succeeded it, have brought a very large number of cases under the care of military surgeons. As a weapon of revenge the popularity of the dagger has waned, but the revolver has a prominent place in methods of reprisal, and the diaphragm often suffers.

In the cases usually met with in civil surgery the muscle is ruptured as a result of crushing violence, whereas injuries of the diaphragm seen in military surgery are commonly produced by an open wound. Each of these types of injury produces consequences of surgical importance at two stages—an early stage in which serious symptoms follow immediately after the injury, and a late stage where the patient suffers from certain special complications months or years afterwards.

I propose, then, to consider the subject of this lecture in two parts, dealing first with the early effects, and afterwards with the late effects of injuries of the diaphragm.

EARLY EFFECTS OF INJURIES OF THE DIAPHRAGM.

Injuries Without an External Wound.

When the diaphragm is injured by severe external violence in the nature of a crush, it may be ruptured by a stretching and bursting mechanism, or it may be torn by the sharp end of a fractured rib; such cases are of two types, according to whether the vault or one of the crura of the muscle is implicated.

Rupture of the Vault of the Diaphragm.

This is the commoner lesion, and is usually due to a person being run over. It occurs most frequently in children and adolescents, because their thoracic skeleton is elastic and can be compressed to a considerable degree without fracture. The mechanism of simple rupture of the diaphragm is of interest, and in this connexion I have had convincing personal proof of the amount of compression and displacement that the thoracic wall and the upper abdominal viscera can withstand without harm, for at the age of 18 it was my fortune to be run over by a motor-bus, weighing about two tons and containing six people, the back wheel passing over the right hypochondrium and lower chest, across the sternum and the left shoulder; after the accident no lesion was discoverable until the right side of the chest-wall fell in three days later, as a result of the separation of the attachments of the right costal cartilages. Two years ago I saw a precisely similar condition in a girl of 3 years, run over by a car which passed obliquely across the left hypochondrium and right chest, and caused no apparent injury beyond costo-chondral dislocations.

Such escapes are to be considered fortunate, for it is by similar violence that rupture of the diaphragm is caused. A tear of the right side is very uncommon owing to its relation to the liver, which from its comparative immobility has to bear the brunt of a compression injury of this region. I have seen a case of severe reactionary hæmorrhage from the liver into the pleural cavity through an opening in this part of the muscle. On the other hand, the mobility and elasticity of the viscera on the left side enable them to act as a sort of air-cushion and transmit the force to the stretched diaphragm, and it is ruptured; the tear usually occurs in the posterior part of the muscle, and sometimes extends into its œsophageal opening. The symptoms at first are those of shock, dyspnœa, and disordered action of the heart. The breathing presents certain typical characters; its rate is little altered, but it is almost entirely thoracic in type, with a catch at the end of inspiration (sometimes definite spasm or hiccough); painful and repeated cough may occur, and the lips are blue. The pulse is rapid and irregular. After about 24 hours the patient may recover from shock, and diaphragmatic breathing be restored by the tear becoming plugged by omentum. In several instances the patients have appeared remarkably free from symptoms after the first two days. The early development of a hernia of the stomach into the left pleural cavity, usually accompanied by omentum and transverse colon, gives rise to vomiting and other signs of obstruction, but without distension. Dyspnœa and tachycardia recur, and severe pain is present, in the abdomen and often in the neck or shoulder. The chest signs resemble those of hydro-pneumothorax. The hernia may reduce itself and recur later, it may become chronic, or it may lead to early death from shock and obstruction.

The difficulties of diagnosis in these cases are well known, and X ray examination may be fallacious, for it is often quite difficult to persuade an opaque meal to enter the supra-diaphragmatic pouch of the stomach. In war surgery it was first pointed out by Lockwood that the cardiac and respiratory embarrassment of wounds of the diaphragm was very similar to that of open pneumothorax, and that the condition of patients improved as soon as the communication between thorax and abdomen was closed. It is this consideration that makes early operation of importance, also in cases of simple rupture of the muscle; the rapidity of the pulse, being due partly to mechanical causes, is no criterion of the degree of shock.

A case admitted to St. Mary's Hospital in 1917 illustrates the early effects of simple rupture of the diaphragm. The paitent, a girl of 5, was run over by a taxi-cab; she vomited at once, and on two occasions after admission; she was in a state of severe shock and lay on her left side. After 18 hours her condition was good, and she was taking ordinary food; on the sixth day, however, she began to complain of severe pain in the abdomen and in the back of the neck, and any food taken was vomited at once; next day there were signs of air and fluid in the left chest, and the heart was displaced to the right. The symptoms abated, only to recur three days later; diaphragmatic hernia of the stomach was diagnosed by the surgeon, but X rays showed that bismuth passed normally below the diaphragm, and the radiographer considered the case one of hydro-pneumothorax. Exploratory operation was precluded by the collapsed state of the child and she died on the following day. Autopsy showed a tear of the diaphragm through which the whole of the stomach, the omentum, and part of the transverse colon had passed. The alternating periods of severe illness and apparently normal health made the case one of great difficulty; the hernia evidently had reduced itself after its first appearance, only to recur with fatal result.

Rupture of the Crus of the Diaphragm.

This must be an uncommon injury, of which I have seen one example, in association with fracture of the spine. The diaphragm injury was of clinical

* Published in full, with illustrations and bibliography, in the current number of the British Journal of Surgery.

importance, as it gave rise to great respiratory distress and intraperitoneal hæmorrhage, which simulated rupture of a viscus.

The patient, a man of 40, fell over 30 feet on to pavement; admitted at once to St. Mary's Hospital, he suffered from severe shock, and a compression fracture of the eleventh and twelfth dorsal vertebræ and fracture of the pelvis were present; signs of intrathecal bleeding developed later. Five hours after the accident the breathing was shallow, of thoracic type, with a catch at inspiration; the right upper rectus showed a small area of rigidity. A diagnosis of injury in the neighbourhood of the crura of the diaphragm was made, with possible rupture of the duodenum, and the abdomen was explored by a left paramedian incision, carried outwards below through the left rectus. There was a rupture of the internal part of the left crus of the diaphragm, and from this and from the œsophageal branches of the coronary vein blood was escaping through a tear in the overlying peritoneum; the bleeding was arrested, the distended stomach was washed out, and the abdomen was closed. After suffering from hiccough for a few days, the man made a complete recovery from all the injuries.

Simple Laceration of the Diaphragm by a Fractured Rib.

Penetration of the diaphragm by a rib which has sustained a simple fracture usually results from direct violence to the ninth or tenth rib, and the bone may also lacerate the spleen or liver. It is, I think, not commonly realised that this is the mode of injury of some cases classed as rupture of the spleen, and that the severity of the symptoms is partially due to hæmorrhage, and partially also to the handicap that injury of the diaphragm places on heart and respiration. The chances of recovery are improved by closing the opening in the muscle.

In dealing with a bleeding spleen through an abdominal-wall incision, considerable manipulation may be necessary, and the difficulty of exposure makes anything short of splenectomy almost impossible. Since it is known that the old fear of opening the pleura was an unnecessary one, the advantages of approaching certain injuries of the spleen through the chest wall are definite, especially injuries due to rib fracture. In the absence of fracture the tenth rib may be resected and the unopened pleura pushed aside; if a fracture is present, the broken rib is removed, the openings in pleura and diaphragm are enlarged, and their edges are sutured together to close the pleural sac. The exposure of the spleen thus obtained allows of the damaged portion being sutured or resected, procedures of far less severity then splenectomy; even if removal of the spleen is necessary, the manipulation of the pedicle, so productive of shock, can be carried out more gently than through an abdominal-wall incision.

Dealing with injury of abdominal viscera by transthoracic laparotomy is not new, for in 1912 Sauerbruch[1] described three successful operations, carried out under differential pressure.

It appears then that simple rupture of the diaphragm causes symptoms which may be easily overlooked or attributed to shock and hæmorrhage; such rupture may be associated with bleeding from spleen or liver, and in operating for these conditions the diaphragm should be examined, and sutured if torn, in order to relieve the immediate embarrassment of heart and lungs and to prevent diaphragmatic hernia.

Penetrating Wounds of the Diaphragm; Abdomino-thoracic Wounds.

While I realise that the partial cessation of war makes this part of my lecture to some extent a matter of historical interest, at least it is recent history; in spite of all hopes wars have not finally ceased, and it is reasonable to expect that the opportunity will be forced on some of us to return reluctantly to military surgery; moreover, in civil war and in peace, penetrating wounds of the diaphragm do occur from time to time. Such wounds had a very high mortality in the great war; the severity of those seen at casualty clearing stations made one realise how many deaths on the battlefield and in field ambulances must have resulted from wounds implicating the diaphragm.

As is well known, in 1915 it was established that the correct treatment of wounds of the abdomen, with the exception of some in its upper part, was early operation. Severe wounds, involving thorax as well as abdomen, were judged to be outside the range of active surgery. At this earlier period the treatment of wounds passing through the diaphragm was little more advanced than at the time of Waterloo: Guthrie, in his book dealing with the war surgery of that period and of the Crimea, gave details of a series of cases. He called attention to the peculiarity of the breathing—"dyspnœa with a peculiar sort of jerk or spasm," and to the important symptom of pain on the top of the shoulder with loss of power of the arm. However, the early operative treatment of chest wounds was developed, and soon extended to the more severe abdomino-thoracic cases. These wounds were very common, owing to the large target that the sloping surfaces of the diaphragm offer to missiles, from whichever direction they approach. It was soon apparent that the results of operations on the trunk, especially in tented hospitals, were more disappointing in winter than in summer; and at all times excessive cigarette-smoking, often right up to the hour of operation, increased the risks of chest surgery, while constipation made abdominal wounds in soldiers specially difficult: the coexistence of both factors made abdomino-thoracic surgery particularly dangerous. The wounds were usually due to bullets or fragments of shell or bomb; in fact during my service as a surgeon for more than four years in France and Belgium I never met with a bayonet wound of the diaphragm. Of a series of 50 cases, 16 were due to bullets, 34 to shell or bomb; the notes are unfortunately only a part of those that I made during the last two and a half years of the war, for some were lost during the rapid travelling that was forced upon us in March, 1918.

Prognosis.—In shell wounds the prognosis depended partly on the size of the fragment; a man rarely reached England with a large fragment retained in thorax or abdomen; such cases either died or had the missiles extracted in France. Except at times when the numbers of wounded necessitated the exclusion of cases of bad prognosis, I thought it right to operate on most desperate cases, not only in hope of occasional successes, but also because a policy of despair is bad for morale.

The most serious element of a wound traversing the diaphragm may be (1) the actual opening in the muscle; (2) the injury of thoracic organs; (3) the abdominal lesions; (4) severe injuries of abdominal and thoracic viscera in the same patient. The actual opening handicaps circulation and respiration, it allows prolapse of abdominal organs into the thorax, and it enables infection to escape from below to the pleura, and in the opposite direction. The thoracic injuries interfere with respiration from collapse of the lung, hæmothorax, and pneumothorax; and they may endanger life by loss of blood, sepsis, and injury of the heart. The dangers of the abdominal lesions are hæmorrhage, sepsis, intestinal obstruction, and interference with processes of metabolism, such as may result from a wound of the liver.

The *diagnosis* of injury of the diaphragm can usually be settled in through-and-through wounds of the body by estimation of the line that the missile has taken; if it is retained, its localisation by X rays and the character of the breathing are the indications of most value. The patients usually arrived at the clearing station in a state of shock and exhaustion, and in most instances resuscitation by rest and warmth was necessary; at this stage estimation of the blood pressure gave a more useful indication of the patient's condition than the pulse-rate; the slow pulse of men wounded in the liver is apt to be deceptive.

Treatment.—The primary objects of early operation in chest wounds are the prevention of sepsis and the closure of an open wound of the pleura, and the same

[1] Trans. German Congr. of Surg., 1912, i., 142.

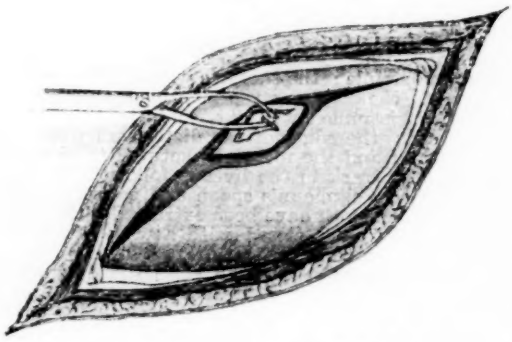
considerations apply when the abdomen also is involved, but here the further complication of serious hæmorrhage is more often present; every hour of waiting diminishes the chances of success. Clean bullet wounds and small through-and-through shell wounds often did well without operation, hæmothorax being dealt with by repeated aspirations. In some of the lighter cases such simple operations as excision and suture of the wounds of the thoracic wall and the diaphragm were performed, but experience of sepsis of lung and pleura, extra-peritoneal cellulitis, and abscess of the liver convinced me that thorough cleansing of the whole track was the safer policy. Radical treatment is especially necessary in wounds due to large projectiles, on account of the dangers of indriven cloth, lacerated muscle, comminuted bone, and "sucking" or "leaking" condition of the thorax.

The severity of the patient's general condition is no bar to active surgery, for to a man who appears very ill soon after the receipt of a wound of the diaphragm operation usually holds out the only hope of recovery, and it is impossible to estimate to what degree his symptoms are due to hæmorrhage, to mechanical interference with thoracic viscera, and to hernia of abdominal contents, all of which can be corrected by early operation.

Operative Methods.—Two general methods of operation have been employed by different surgeons:—

1. Operation through an abdominal incision, a separate incision of the thoracic wall being made, if necessary, for dealing with intra-thoracic injuries.

FIG. 1.



Excision and enlargement of wound of diaphragm.

2. An incision through the lower part of the chest wall, carried forwards and downwards into the abdominal wall in certain circumstances. It has been found possible to deal with most of the abdomino-thoracic wounds by this type of operation, and I give a general description of its stages.

(*a*) If there is a wound of the lower part of the thorax, it is excised with injured muscle, bone and pleura, in one piece.

(*b*) Any lesion of the lung is then dealt with, pieces of metal, bone, and cloth being removed, and the contaminated portion of lung is best excised and sutured.

(*c*) The pleura is then cleansed, in slight cases by swabbing, in severe ones by eusol, run in through a tube and siphoned off; swabbing has advantages but causes a great deal of shock if it is prolonged.

(*d*) The wound of the diaphragm is excised, and enlarged if necessary (Fig. 1); its edge is then securely sutured to the intercostal muscles, closing the pleural cavity. Speed in the above stages of the operation is very important.

(*e*) The abdominal viscera are examined and repaired (Fig. 2), the incision being carried downwards and forwards through abdominal wall and costal margin if necessary.

(*f*) The wound is sutured in layers, drainage of the abdomen being established in certain cases.

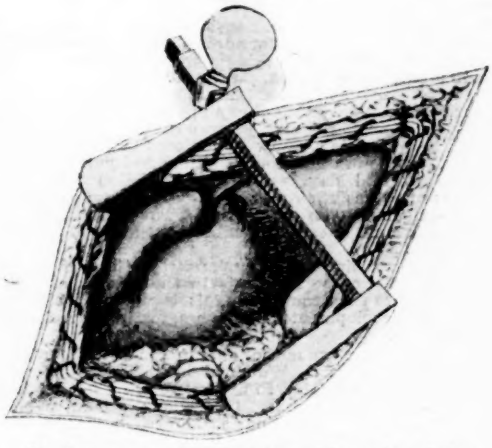
An operation of this nature, modified to suit the needs of individual cases, provides good access to every part of the lung, and in this way I have dealt with wounds of the spleen, stomach, liver, colon, kidney, and small intestine. Suturing the diaphragm to the chest wall allows the abdominal part of the operation to be done with the pleural sac closed, and it is more secure than independent suture of each opening.

In minimising the shock of so severe an operation, the method of anæsthesia is most important. Paravertebral nerve-blocking, with gas-oxygen, was employed in most of the cases; if gas was unobtainable just sufficient chloroform or ether to keep the patient in light sleep was given. Transfusion of blood was responsible for many successes. It was given towards the end of the operation; I think this is less wasteful, and perhaps more useful, than to give it as a preliminary measure; for one thing, the patient operated on before transfusion needs less anæsthetic. Oxygen was given during and for several hours after the operation, the only stimulant that is not valueless or harmful, and rectal and subcutaneous saline, up to 20 pints in 24 hours, was used as a routine.

Varieties of Wounds of the Diaphragm.

To make an elaborate classification would appear to serve no useful purpose, but the following aspects may be borne in mind: 1. The part affected, whether the central tendon, the right or left vault, or the margin. 2. The relation of the direction of the missile

FIG. 2.



Diaphragm sutured to the intercostal muscles, closing pleural sac, and exposing abdominal viscera.

to the muscle; parallel to its surface, causing injury by indriven fragments of rib, or producing a gutter-wound; oblique, perforating the muscle; missiles whose direction nearly corresponds to the long axis of the trunk. 3. Complications of sepsis and hæmorrhage. 4. Associated injury of liver, spleen, pancreas, kidney, stomach, colon, jejunum, omentum, or lung. 5. Prolapse of abdominal contents into the thorax.

Most wounds of the central tendon involve the heart; such cases rarely reached the clearing stations, and I never saw one that was not moribund on arrival. Contour wounds, more or less in the line of the margin of the thorax, may cause severe injury to the edge of the diaphragm without involvement of the pleura. Wounds of this type, even when the peritoneum is uninjured, repay early excision en masse of the wound, fractured cartilages and ribs, and suture of diaphragm and chest wall; this prevents suppuration and the disability that results from a large mass of scar tissue in this situation. In wounds at a higher level the missile might remain above the diaphragm, but a perforation be caused by fractured rib driven through the muscle.

CASE 31.—Wound of diaphragm and liver by fractured rib. Wounded by shell 9.30 A.M., May 16th, 1918. Missile passed through the right arm, dividing the brachial artery,

and entered the chest, fracturing the sixth and seventh ribs. Operation six hours later; brachial artery ligatured; thoracic wound, with fractured part of ribs, excised, projectile removed from pleural cavity, which was then cleaned and its upper part closed by suture of diaphragm to chest wall; hole in diaphragm, due to fractured end of seventh rib, sutured; wound closed, with rubber-tissue drain to costo-phrenic recess. Aseptic healing. Evacuated to base on ninth day with no chest symptoms.

Similar wounds fracturing several of the lower ribs were frequently responsible for severe injury of pleura, diaphragm, and under-lying viscera by indriven bone, again the missile itself not penetrating; wounds of this type were commonly seen on the right side, left-sided ones being more rapidly fatal.

CASE 26.—Contour wound causing indriven fractures of five ribs and severe laceration of diaphragm and liver with prolapse of omentum. Wounded by shell 11 A.M., March 24th, 1918; extensive open wound of right lower thorax, prolapsed omentum. Ten hours later pulse 72, poor volume; operation at once, excision of the large mass of damaged tissue, with five fractured ribs and lacerated area of diaphragm, pleura cleansed and closed; lacerated liver resected and sutured, prolapsed omentum removed; peritoneal cavity closed off by suture, with gauze pack to liver. The patient had been wounded in front of Arras on a day of the greatest anxiety to the British Army; he had to be sent to the base, in good condition, on the following day. I was unable to trace his subsequent history, but his chances were small.

On the left side wounds of this nature may cause iniury of stomach or spleen, or allow the escape of abdominal viscera into the pleura.

CASE 16.—Contour wound with prolapse of stomach and omentum into pleura. Wounded by shell, and admitted same day with large "sucking" wound fracturing eighth left rib; extreme dyspnœa, pulse 130. Operation: wound and shattered rib excised, stomach and omentum prolapsed through large hole in diaphragm; stomach reduced and omentum removed; inner margin of diaphragm opening sutured to intercostals, and wound closed with subcutaneous drain. At close of operation breathing and pulse had much improved. Third day, pulse 110, condition fairly good, but signs of extensive bronchitis in both lungs; death from broncho-pneumonia on fourth day. The man was fat and 40, and this and the cold December weather were unfavourable factors.

Missiles whose line is nearly parallel to the surface of the diaphragm may cause long cuts in the muscle, sometimes not dividing the peritoneum. This type would allow the subsequent development of diaphragmatic hernia with a peritoneal sac.

CASE 1.—Gutter wound of diaphragm, missile retained in costo-phrenic recess. Wounded by shell. On admission a lacerated wound related to ninth left rib; left abdomen rigid, left thorax immobile. Operation: wound and fractured rib excised. Examination showed a wound of the diaphragm, 2 inches long, 1 inch wide, running from before backwards. Incision prolonged forwards and downwards; examination of under aspect of diaphragm showed its peritoneum intact. Returning to the pleural cavity, a piece of shell and some cloth were removed from costo-phrenic recess. Diaphragm and parietes sutured with subcutaneous drain. Wound healed by first intention, and patient was sent to the base, quite fit, ten days later.

On the right side through-and-through bullet wounds from the hypochondrium to the eighth, ninth, or tenth intercostal space usually do not need operation, in the absence of bleeding from the liver, which is unusual. If, however, by a wound of this type a rib has been fractured, there is distinctly more risk of infection; at the first possible opportunity, therefore, the wounded skin, muscle, pleura, and fractured rib are excised en masse, and primary suture without drainage is carried out.

Through-and-through shell wounds due to small fragments of shell were treated on the same lines, but infection of the pleura or liver and subphrenic abscess occurred more commonly than in bullet wounds of this region. In shell wounds primary operations for the arrest of hæmorrhage were frequently necessary, severe bleeding from the liver being usually caused by large fragments.

CASE 10.—Large bleeding wound of liver, with open pneumothorax. Wounded at 2 P.M. by bomb, causing large wound, two inches outside right nipple, which being of the "sucking" variety was sutured at the field ambulance. Large missile could be felt among muscles related to ninth interspace. Operation (9.30 P.M.): entrance of sixth intercostal space excised and enlarged; much blood and some fragments of liver, lying free in pleural sac, removed; large wound of diaphragm excised, and pleural cavity closed; detached pieces of liver removed from subphrenic space, large gutter wound of liver bleeding; liver wound cleansed, light gauze pack, suture of parietes. Projectile and surrounding tissues excised, opening pleura at ninth interspace; sutured without drainage. Next day, temperature 105° F. Third day, temperature 102°, pulse 100, much bile and old blood discharging. Twelfth day, patient quite fit, temperature having been normal for some days; posterior wound healed without sepsis, anterior wound clean and closed by healthy granulation; sent to base.

A common variety of wound was where a small fragment of shell had passed through the lower part of the thorax into the liver and was retained; at first I thought these cases could be best treated conservatively, but experience showed that cloth was often carried in and caused acute suppuration of the liver in some cases.

CASE 7.—Acute abscess of liver around two pieces of shell. Wounded by projectile fracturing anterior part of right eighth rib. Operation (same day): wounds of chest wall and of diaphragm excised and sutured independently without drainage. Sixth day wound healed, aseptic; fever, tenderness of liver: X rays showed two foreign bodies in left lobe of liver. On the seventh day I was asked to operate, the man being intensely toxæmic. Operation: exposure by the method of Auvray, foul-smelling subphrenic abscess opened, wound entering upper and outer aspect of liver traced through long track to abscess, containing two pieces of shell, situated in posterior part of left lobe; abscess drained, wound sutured. Death from toxæmia next day.

As well as infection of the liver, fragments of shell retained in this organ often caused infection of the pleura and the subphrenic space, while secondary hæmorrhage into the pleura and biliary fistula were less frequent complications. Experience of such complications convinced me that it was safer to remove by primary operation every fragment of shell, bone, or cloth from this viscus. The operation is quick and simple: the thoracic wound is excised, the opening in the diaphragm is identified, and a cone of the muscle is pulled well out, so as to close off the pleural sac; the edges of the diaphragm wound are then excised and the muscle is sutured to the intercostals; the track in the liver is followed up and is cleaned with Volkmann's spoon and gauze, after the missile and all cloth have been extracted; the wound of the chest wall is closed with a wick of gauze or rubber tissue in the liver track. In allowing drainage this method is safer than to close the openings in diaphragm and chest wall independently. Severe primary hæmorrhage from the liver into the pleura was not uncommon, but similar secondary hæmorrhage was less often seen.

CASE 21.—Infection of pleura by *B. perfringens*, severe secondary hæmorrhage from wound of liver, due to small fragment of shell which was retained. Wounded 2 P.M., Dec. 27th, in posterior part of tenth right interspace; severe collapse, rigidity and tenderness of hypochondrium; X rays showed small foreign body in liver, six inches deep. Operation (10.30 P.M.): wound excised, much blood removed from pleura, chest wall sutured. Jan. 6th: leaking of foul, bloody fluid from wound, *B. perfringens* identified; stitches removed, pleura drained. Jan. 10th, severe secondary hæmorrhage filling pleura and escaping externally; ninth rib excised, pleura cleared of blood and closed by diaphragm-intercostal suture; light pack of bleeding liver track; 800 c.cm. blood transfusion. The patient died of collapse and toxæmia. A thorough primary operation might have been expected to give a better result.

In all cases of wound of the liver, however slight the injury might appear, there is a risk of the development of a train of symptoms of extremely acute onset, followed by death in a few hours; a patient who is apparently doing well, with normal pulse and temperature, suddenly about the fourth day becomes intensely collapsed, and the pulse is not palpable; there may be acute delirium, and the temperature runs up to 105° or more; death takes place in a few hours. Post-mortem examination in several cases showed no suppuration or hæmorrhage; on section the whole liver was pale, except for a bile-stained zone around the wound. The clinical condition of these cases closely resembled that seen in delayed

anæsthetic poisoning, and appeared due rather to toxæmia from destruction of liver tissue than to infection.

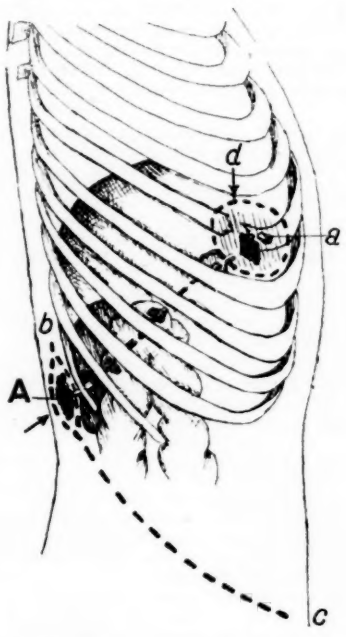
Injury of the lung by a missile which passes through the thorax before entering the abdomen is a serious complication, but needs no special consideration here; it suffices to say that any special treatment for the lung should be completed before the abdominal part of the wound is dealt with. Implication of both lungs in a wound which traverses the diaphragm usually causes death; in one case of this nature I had to operate for hæmorrhage from lung and kidney.

CASE 32.—Wounded by bullet entering sixth right interspace, exit posterior aspect left chest; severe hæmorrhage from wound and hæmoptysis. Operation within 12 hours. Exit wound and four fractured ribs excised; lung, adherent to pleura and bleeding freely, sutured; left kidney, extensively lacerated, excised; diaphragm and chest wall sutured; patient died the same day.

Wounds that traverse the diaphragm and then enter the lung are more serious as a rule than those passing from above downwards; of this class the most favourable are those that enter the lower part of the chest wall, pass through the diaphragm in two places, and then enter the lung. The passage of a projectile into the thorax, after traversing the intestine, nearly always caused death; I know of no case that recovered if the missile wounded the lung after passing through the gut. Wounds of the colon involving the pleura were specially difficult to deal with, and the danger of death from infection of pleura or retroperitoneal cellulitis was very great; to diminish the risk of the latter complication I adopted the expedient of making an oblique incision and leaving unsutured all the layers of the abdominal wall, except the peritoneum; such wounds do not gape if the patient is kept sitting up without intermission.

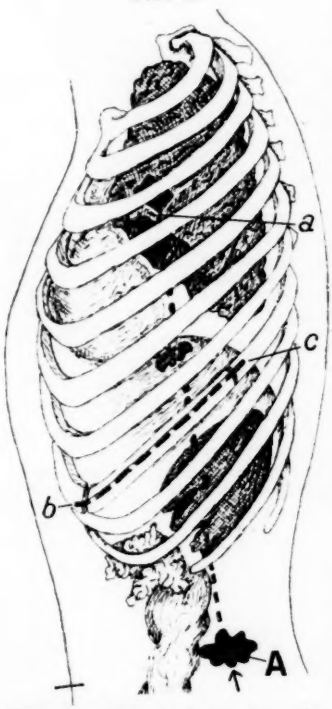
Thanks to excellent nursing the following case of shell wound of right kidney, hepatic flexure of colon, diaphragm, and pleura, with fracture of rib, recovered in spite of the pleura, peritoneum, and perinephric fat being severely contaminated with colon contents. (Fig. 3.)

FIG. 3.



CASE 34.—Shell wound of the right kidney, colon, diaphragm, and pleura. A to *a* = course of missile; *b* to *c* and *d* = positions of operation incisions.

FIG. 4.



CASE 41.—Wound of the spleen, diaphragm, omentum, and lung. A = entrance wound; *a* = missile retained in lung; *b* to *c* = site of operation incision.

FIG. 5.

CASE 41.—Extent of injuries of spleen, treated by resection of three-fifths of the viscus.

CASE 34.—Wounded 10.20 A.M., May 26th; on admission 5 P.M., lacerated wound below right twelfth rib, missile felt at front part of sixth rib under skin, which was punctured and discoloured over wide area. Operation at once, gas-oxygen, intercostal and lumbar nerves blocked with novocaine. Excision of tissue round foreign body, with wide area of skin, fractured sixth rib, and wound of diaphragm; distinct fæcal smell on opening pleura, excised tissues stained with intestinal contents; pleura irrigated with eusol and wound sutured without drainage. Entrance wound excised and enlarged by oblique incision to linea semilunaris; right kidney, torn right across, removed; through-and-through wounds of hepatic flexure, causing considerable soiling, sutured, and peritoneum closed; wound otherwise left open except for two sutures to rectus sheath; Carrel tubes to abdominal wall and perinephric fat; 20 oz. blood transfusion; pulse at end of operation 120, blood pressure 70. June 1st to 10th, fæcal fistula; 11th, chest wound healed by first intention, abdominal wound granulated to skin, one inch wide at widest part; patient sent to base. Wrote from England a few weeks later "wound almost completely healed, awaiting a ship for repatriation to New Zealand."

When the direction of a missile nearly corresponds to the long axis of the body, it may have a long course in abdomen and thorax before being arrested; here the problem that presents itself is how to expose all the injured structures with the minimum of additional trauma to the patient. Resection of the eighth or ninth rib gives sufficient exposure of the thorax and abdomen for most injuries; if necessary the thoracic incision can be prolonged into the abdominal wall. The following case illustrates these points, and is also of interest because it was the first occasion on which I performed a partial resection of the spleen;

this appeared to me to be less severe for wounds not involving the hilum, but it would be hardly feasible by any other exposure. (Fig. 4.)

CASE 41.—Wound of spleen, diaphragm, and lung; resection of damaged part of spleen, large projectile removed from upper lobe of lung. Wounded by shell at 1 P.M. Six hours later, condition good, pulse 76; large laceration six inches to left of third lumbar spine. Severe dyspnœa, left abdomen rigid, no vomiting or hæmoptysis. X rays show missile in upper part of lung, and large hæmothorax. 8.30 P.M., pulse 84, operation; light sleep by chloroform on one layer of gauze, lower seven dorsal and upper three lumbar nerves blocked with novocaine. Anterior six inches of eighth rib and costal cartilage removed, pleura opened and cleared of blood; piece of shell embedded in upper lobe of lung, removed; lung track cleaned, irrigation with eusol; wound at highest point of diaphragm sutured and fixed to sixth interspace; pleura closed by diaphragm-intercostal suture. Incision near margin of diaphragm; spleen bleeding from severe lacerations of its lower third extending right through it in an area three inches wide (Fig. 5); resection of lower three-fifths of spleen, suture of capsule; wound closed with rubber drain to spleen. Wound of entry passing through abdominal wall to outer side of colon excised, peritoneum sutured, rest of wound packed with 1 per cent. iodoform paraffin gauze. Pulse at end of operation 92. Next day, pulse 92, no dyspnœa, vomited twice slightly; third day, very fit, pulse 88; fourth day, drain removed; seventh day, stitches removed, upper wound healed, loin wound appears aseptic; nineteenth day, sent to base, loin almost healed. Went to England a few days later, and returned to his home two months afterwards, without complications.

For anatomical reasons wounds which perforate the left side of the diaphragm offer more variety than those on the right, and are more often responsible for hæmorrhage from spleen, mesentery, or omentum, penetration of stomach or intestine, and escape of abdominal organs into the pleural cavity; wound of this side also causes more respiratory and cardiac embarrassment.

The common varieties of wounds of the spleen were gutter wounds of the outer surface, through-and-through perforations with radiating splits of the capsule, severe lacerations, and complete separation of a segment. Wounding of the spleen is not necessarily an indication for operation, but as a general rule it is safer to look and see than to "wait and see." In my earlier cases I sutured the lacerations or removed the organ; when I realised the ease with which the spleen could be exposed by an incision through the outer part of the diaphragm I was able to resect the damaged portion in some cases. In many cases wounds of the spleen are associated with injuries of other viscera; in the following one the missile was retained in the pancreas.

CASE 35.—Shell wound of diaphragm, spleen, and pancreas. Wounded by shell fragment fracturing ninth left rib; vomited at once. On admission, collapse, pulse 130, general abdominal rigidity; X rays show missile 1½ inches from midline, 6 inches deep from front. Operation seven hours after injury, wound and 5 inches of rib excised, prolapsed omentum reduced, wound of diaphragm excised, pleura closed, pulped spleen removed, track traced into pancreas, missile not removed; closed without drainage; 25 oz. blood transfusion. Recovery without incident.

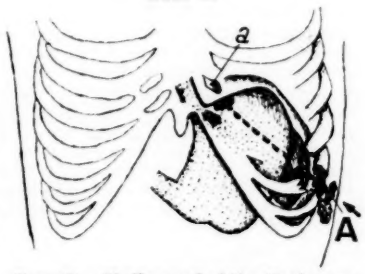
In several cases severe hæmorrhage occurred from omentum as a complication of a wound of the left side of the diaphragm, the viscera escaping injury. The stomach is often implicated in abdomino-thoracic wounds; it may be wounded, it may prolapse through the diaphragm, and in one case a gastric fistula discharged through a wound of the lung. In these wounds it is often the cardiac end of the stomach that is injured, and this region and the posterior surface are more accessible through a thoracic than an abdominal incision.

The following case illustrates the ease with which a lacerated wound one inch from the cardia was sutured, and the posterior surface explored by tearing through the gastro-splenic omentum. The missile had remained in the lumen of the stomach. (Fig. 6.)

CASE 37.—Abdomino-thoracic wound of spleen and stomach. Wounded by fragment of shell entering seventh left interspace; no vomiting. Seven hours later, pulse 108, left abdominal rigidity, catch in respiration; X rays—missile related to left suprarenal body. Operation eight hours after injury, gas-oxygen, intercostal nerve-block; excision of wound and 6 inches of fractured eighth rib and cartilage, prolapsed omentum reduced, diaphragm wound excised, pleura cleansed and closed. Incision prolonged to abdominal wall, lacerated wound of greater curvature of stomach one inch from cardia sutured, through-and-through wound of spleen not bleeding; closed without drainage after careful examination of whole of posterior surface of stomach. No shock or vomiting; healed by tenth day, except for one stitch abscess of abdominal wall. Wrote from England two months later "fully recovered, no complications."

Injury of the kidneys was a common complication, its seriousness depending on hæmorrhage, and later perinephric infection; the former was usually controlled by packing, occasionally by suture; in many cases lumbar or transpleural nephrectomy was necessary. For all wounds of the kidney it is necessary to drain the perinephric tissue early; when a wound of the diaphragm is also present it is important to close it, for in many cases an opening in the muscle allowed infection to gain the pleura. The effects due to the actual opening in the diaphragm have already been indicated; that most worthy of special notice is the prolapse of abdominal contents into one or other pleural sac. On the right side this complication is unusual, but portions of liver may be found lying free in this side of the thoracic cavity, and occasionally omentum prolapses. On the left side the omentum very frequently passes through the wound of the diaphragm, and this fact forms a definite indication that all wounds of the left side of the muscle should be repaired by operation. The occurrence of gastric or intestinal fistula opening through the thorax is uncommon; a case wounded in 1917 developed a gastric fistula, opening through the left lung and chest wall.

FIG. 6.



CASE 37.—Shell wound of the diaphragm, spleen, and stomach, with prolapsed omentum. A = entrance wound; a = wound near cardia of stomach.

CASE 51.—Admitted with leaking wound of posterior part of left intercostal space, vomiting, and severe collapse; the general condition improved, but on the fifth day escape of gastric juice was apparent, and on the seventh day I made a jejunostomy under local anæsthesia. The man died on the following day, and autopsy showed the whole of the stomach in the left pleural sac, a wound of its posterior wall communicating with the exterior by a track passing through left lung, which was adherent to the stomach and parietal pleura; no sign of general infection of pleural cavity or peritoneum.

LATE EFFECTS OF INJURIES OF THE DIAPHRAGM.

Most of the late effects which follow rupture or wounding of the diaphragm fall into three groups: (1) the results of a foreign body embedded in the muscle; (2) scarring and adhesions; (3) diaphragmatic hernia.

Foreign Bodies Embedded in the Muscle.

The most prominent symptom of a projectile embedded in the muscle is fixed pain, produced especially by the effort of lifting, by coughing, and by deep inspiration; some patients complain of attacks of suffocation, others of irritating cough. The patient learns to keep the affected side of the muscle immobile.

The diagnosis depends on localisation by X rays. As to treatment, the foreign body should be removed if symptoms are sufficiently severe, and this is best done by open transpleural operation, which allows the release of pleural adhesions, often responsible for many of the patients' symptoms.

Scarring and Adhesions.

Adhesion of a scar of the diaphragm to the chest wall and to the viscera in relation to it appears to cause definite disability. These patients complain especially of pain on exertion, situated in the region of the wound, in the lower thorax and upper abdomen, and just below the clavicle; in some there is præcordial pain and palpitation. Many soldiers wounded in the chest have complained subsequently of gastric symptoms, especially loss of appetite and vomiting; these symptoms may be due to immobility of the diaphragm, adhesions, and sometimes to a communication between the pleural and peritoneal cavities. Undoubtedly diaphragmatic hernia is a more common sequela of wounds of the left side than has been realised, and many cases have been overlooked; there is a danger of diagnosing adhesions alone in patients whose symptoms are really due to hernia, and this condition should always be suspected in men complaining of pain and attacks of vomiting. The presence of adhesions involving the diaphragm can be demonstrated by X rays.

I saw recently a pensioner who was wounded in the left thigh by a rifle bullet in August, 1915. There were two scars below the left iliac crest, the lower one being circular, the other, immediately above it, was vertical and about two inches long; the wound had always been considered to be a superficial one of the through-and-through type. There was no sign of bone or muscle injury, but the man was complaining of pain in the chest, cough, and expectoration, palpitation on exertion, and shooting pain under the heart; he was thin, pale, and cachectic, with a pulse-rate when resting of 120. Rhonchi were heard in the lower part of the left lung. I suggested X ray examination, and this showed a bullet in the left chest, just above and outside the apex of the heart. The military history of this man is interesting, for he was sent back to duty overseas six weeks after being wounded, and he remained with the army abroad until April, 1919. He succeeded in gaining admission to hospital for two months in 1917 and for two and a half months in 1918, the diagnosis being made of bronchitis on the first occasion, and of pyrexia N.Y.D. on the second occasion; I saw him because he was appealing against an inadequate pension.

I have mentioned this case because the significance of wounds of this type is apt to be overlooked. As to the treatment of pleural adhesions involving the diaphragm, their separation during operations undertaken primarily for the removal of foreign bodies has seemed to play an important part in the relief given to the patients, but it is a question if thoracotomy is a justifiable operation for adhesions alone: not that the operation itself is dangerous, but it is difficult to ensure a perfectly dry pleura at the end.

Diaphragmatic Hernia Resulting from Injury.

By far the most important of the late results of wounds and other injuries of the diaphragm is the persistence of a communication between the pleural and peritoneal cavities; it was known more than a century ago that wounds of this muscle rarely healed, and it seems likely that as a result of the recent wars there are now living a larger number of men suffering with diaphragmatic hernia than at any previous time.

There has been considerable discussion on the question of how long after the injury the hernia usually occurs, and in most cases the onset of symptoms has been so insidious that it is impossible to put a date to their commencement; sometimes the first definite symptoms have followed a sudden strain or prolonged effort, as in the case recorded by Barton[2] where about five months after being wounded the man, who had been sent back to France, vomited every day after his first long march, and continued to do so for nine months.

Traumatic diaphragmatic hernia is infinitely more common on the left side, though hernia of omentum into the right pleural sac sometimes occurs; hernia through the central tendon into the pericardium is very rare. The commonest position for the hernial orifice is in front of and lateral to the œsophageal opening.

Pathology.—In the great majority of instances there is no true hernial sac, but a peritoneal sac is sometimes present and limits the size of the hernia. The edges of the hole in the diaphragm may be sharp-cut and fibrotic, or they may be unrecognisable, the muscle gradually thinning and being incorporated with the surface of the viscera prolapsed; these are most commonly the stomach, the transverse colon and hepatic flexure, the small intestine and the spleen, in order of frequency, but occasionally duodenum, pancreas, and liver have been involved. The viscera become adherent to the margin of the opening and to thoracic contents: adhesion to pericardium and parietal pleura is usual, adhesion to the lung is less common; these adhesions are often very firm and constitute the most serious difficulty in treatment. The stomach becomes dilated and hypertrophied, and in some cases the sharp edge of the diaphragm has produced an ulcer of the part of the stomach on which it pressed; the heart is displaced, the lung is compressed and collapsed. Gastric and intestinal fistula have occurred occasionally. Strangulation is a frequent complication, and in many instances the condition has not been suspected until its discovery at an operation for acute obstruction.

Symptomatology.

The cases can be divided into two main classes: (1) those presenting symptoms of chronic diaphragmatic hernia subject to exacerbations; (2) cases of acute obstruction and strangulation.

1. *Chronic type.*—It is likely that there exist a number of unrecognised cases in which a very small part of the stomach is herniated as the result of an old wound; it is evident that if we can diagnose these while the prolapse is small, the dangers of cure are much diminished. The symptoms of these small herniæ are not very definite, but the occurrence of heartburn, loss of appetite, and pain after meals, palpitation, occasional vomiting, dysphagia, dyspnœa, pain on exertion, gradual loss of weight, and constipation, in a man whose scars indicate a possible old wound of the left side of the diaphragm, should be viewed with grave suspicion. In most of the recorded cases there has been a large portion of the stomach, with or without other viscera, prolapsed into the left pleural cavity. The involvement of the stomach in nearly all cases is responsible for the most prominent symptoms; these may be almost entirely subjective, and one is struck by the number of cases recorded where the sufferers have been looked on as malingerers.

Pain is a prominent symptom; it may be situated in the epigastrium, the lower abdomen, the affected side of the chest, especially below the clavicle, or in the shoulder. Præcordial pain is sometimes present. The pain comes especially very soon after any food or drink is taken, and may be very severe; it is relieved by vomiting, and increased by exertion, especially weight-lifting. Occasionally it has been noted that the pain goes at night, when the patient lies down; sometimes it is only relieved by lying on one particular side; in the case described by Sir Charters Symonds,[3] when during exacerbations the patient sat up with his back flexed, straightening of the back caused acute pain. There may be a sense of great distension after food, referred to chest or abdomen, sometimes a feeling of suffocation.

Vomiting is an important symptom, increased by exercise; often fluids only can be retained. The vomit may contain bile or altered blood. A most valuable clinical observation in regard to the vomiting was described by Gaudier and Labbé.[4] The patient, extremely emaciated, could only retain fluids, and it was noticed that he did so much more easily when

[2] Brit. Med. Jour., 1919, i., 767.

[3] THE LANCET, 1917, i., 18.

[4] Bull. et Mém. Soc. de Chir. de Paris, 1918, xliv., 383.

lying; by keeping him recumbent before and after meals, his general condition improved and he was able to undergo successfully a severe operation. This clinical fact has since been confirmed by many observers, and it constitutes perhaps the most typical single sign of diaphragmatic hernia.

In some cases there has been dysphagia, but this is commoner in the congenital herniæ. Constipation is almost invariable, and often precedes other symptoms. The patients become emaciated, anæmic, and cachectic, and they are usually nervous; the wasting may be very gradual, for the patients learn to confine themselves to milk taken frequently. The respiratory symptoms are pain on deep breathing and dyspnœa; sometimes there are attacks of suffocation, particularly at night. The cardiac symptoms are palpitation and præcordial pain.

Objective evidence is often slight, but some of the following signs may be present: abnormal flattening of the abdomen, and on palpation a sense of emptiness of epigastrium; the abdomen is usually relaxed, but there may be local rigidity and tenderness. The movements of the left side of the thorax are diminished, and fullness may be obvious; the stomach resonance may extend above the nipple. Not uncommonly the breath sounds of the left chest are faint, and accompanied by gurglings and borborygmi, which may be perceptible to the patient at each respiration, especially towards evening: splashing sounds may be elicited.

The close relation of stomach to pericardium gives a persistent tachycardia, increased by exertion and meals; the heart is slightly displaced, and tinkling sounds are sometimes produced by its impulse striking the stomach; these may be heard by the patient.

2. *Acute type.*—Acute obstruction and strangulation produce a condition of great danger, and the recorded instances of recovery are not numerous, on account of the emaciation of the patients and the difficulties of diagnosis. The typical picture is one of acute obstruction with an empty, even hollow, abdomen.

Diagnosis.

In the chronic stage the cases have been most often mistaken for pyloric obstruction or pneumothorax. However, in recent years the technique of their examination by X rays has been carefully studied. The comparison of the position of a single scar with the localisation of a retained missile may give a clear indication of diaphragm injury; simple radiography may show an opaque area to the left of the heart shadow, irregularity of the diaphragm, and displacement of the heart. But it is from radioscopy with the swallowing of bismuth or barium emulsion that the clearest evidence is obtained; repeated examination and considerable manœuvring may be necessary to get the emulsion into the supra-diaphragmatic pouch, and the patient must be examined facing the observer and obliquely, upright and supine.

Treatment.

Little can be done, apart from operative procedures; these fall into three groups: (1) the abdominal method; (2) the thoracic method; (3) the combined abdomino-thoracic method.

1. The most commonly employed abdominal incisions are one placed close to the costal margin, which is divided sometimes, and a high left paramedian incision joining a transverse one at the level of the umbilicus.

2. In the thoracic method of approach, a portion of the sixth, seventh, or eighth rib is resected or mobilised; by removing or turning up all the rib in front of its angle a good view is obtained.

3. The first description of the employment for these cases of an incision opening abdomen and thorax together was apparently given by Bérard.[4] The incision is made over the seventh, eighth, or ninth rib and continued forwards and downwards in the abdominal wall; the rib is resected and the costal cartilage divided. I have used this incision on many occasions for dealing with the results of abdomino-thoracic wounds, and it seems the most suitable for difficult cases of diaphragmatic hernia. Probably it is best to commence by resecting or turning up the rib, the incision being prolonged to the abdominal wall later, if it proves necessary.

There has been a good deal of discussion of the relative merit of the abdominal and thoracic methods. The main objection to the thoracic route seems to be that surgeons are more practised in abdominal than thoracic surgery, and that secondary conditions, such as gastric ulcer, may necessitate intraperitoneal procedures. The abdominal incision will certainly be used for most cases dealt with in the acute stage, for these come to the surgeon as abdominal emergencies; in most of them empty intestines make access to the diaphragm from below fairly easy. But in a chronic case the thoracic method, or the abdomino-thoracic one, possesses considerable advantages, giving a clear view and allowing more adequate repair of the diaphragm.

Stages of Operation for Diaphragmatic Hernia.

After opening abdomen or thorax the prolapsed viscera and omentum must be freed by dividing the adhesions; these may be very dense, and care must be taken not to drag on the pericardium, and that if important structures must be cut they shall be those most easily repaired; naturally it is better to risk opening the stomach than the pericardium or colon. The defect in the diaphragm may be very difficult to define, and in some cases adhesions have been so dense that it has been considered unwise to attempt their separation. In a case recorded by Baumgartner and Herscher[5] the stomach was firmly adherent, and the spleen's outer surface was fixed to a scar of the thoracic wall; the surgeon freed the small intestine, omentum, splenic flexure, and the stomach from the pericardium and front part of the diaphragm, leaving the adhesions of the back of the stomach and the spleen intact; he then adopted an expedient used previously by Lecéne, closing the defect by suturing its edges to the stomach and to scar tissue at the lower part of the spleen; the result was completely satisfactory.

A dangerous step is the reduction of the stomach, for its contents may be forced into the œsophagus and flood the only sound lung; it is recommended that the thoracic pouch of stomach be emptied by aspiration before reduction, a safeguard only possible by the thoracic exposure. Careful closure of the gap in the diaphragm is important and is more easily achieved from above. The last stage of the operation is to close abdomen and thorax after specially careful attention to hæmostasis; when, on rare occasions, it is advisable to drain the pleura a valvular method should be employed.

Conclusion.

We may conclude, then, that in operations for strangulation and acute obstruction the abdominal route will be employed as a rule. In chronic cases the thoracic method of approach has certain advantages; it allows adhesions to be divided under better observation, with more safety and better control of bleeding; the stomach pouch can be emptied before reduction; accurate suture of the diaphragm and any plastic measures demanded can be carried out more satisfactorily; and the pleura can be cleansed and its dryness ensured at the end of the operation. If special difficulties arise, or a gastro-jejunostomy is indicated, the thoracic operation is converted into an abdomino-thoracic one by prolonging the incision. In all types of operation the pleural cavity is open, so that the slight risks of operative pneumothorax are equally present.

[4] Lyon. Chir., 1918, xv., p. 509.

[5] Bull. et Mém. Soc. de Chir. de Paris, 1919, xlv., p. 185.

THE FÆCES IN ALIMENTARY DISORDERS.*

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IT is important to have in mind the fact that normally, on a digestible diet, the only food residues found in the stools are remnants of muscle fibre and the tough debris of vegetables. The fæces are made up of voluminous soap gels, residues of intestinal secretions, excretions, and innumerable bacteria, many of them dead, and only when indigestible cellulose is given are they augmented by vegetable residues, imprisoning in their cellulose and woody envelopes a certain small amount of starch. Even here art has been brought to the help of nature; and by means of cooking, many vegetable foods have been made almost wholly digestible, except for their tough cellulose skeletons. Hence, if foodstuffs occur in the fæces in any notable amount, there is something abnormal, and this abnormality may be due to one of three things, viz.: (*a*) failure of digestion somewhere; (*b*) failure of absorption; or (*c*) hurrying on of the food, so that there is not time for proper digestion or absorption—i.e., diarrhœa.

The diet, however, paradoxically enough, does influence the character of the stools, for the intestinal secretions and the bacterial flora depend a good deal upon the diet which calls them forth. If one might venture upon a description of the normal stool of an ordinary mixed diet, one might say that it is a moulded, fairly firm, more or less cylindrical body, reaction neutral or slightly alkaline to litmus, coloured brown chiefly by the pigments derived from the bile, containing little or no food residues.

However, it is easier to lay hold of the conception of an abnormal stool. Here the fæces have no health in them because either they contain things they ought not to contain—notable quantites of food residues, abnormal substances derived from the gut walls, such as blood, serum, pus, mucus, or from the lumen, such as intestinal calculi, "sand," or parasites—or they may not contain the things they ought to contain, particularly the derivatives of bile pigment. It is a very general opinion that examination of the fæces involves intricate and very specialised chemical operations, but I am convinced that though these are sometimes necessary, in the great majority of cases a comparatively simple technique is adequate for clinical purposes.

Control of Diet.

There are, however, one or two preliminary considerations which must be mentioned. In the first place, the controlling of the diet is a most essential and important matter if valid deductions are to be drawn. I find it useful to examine upon three types of diet:—

(1) It is often most valuable to see the fæces corresponding to a patient's usual diet, and to examine more than a single stool; a rough idea can then be obtained of how he responds to the diet he is in the habit of taking.

(2) Then for two days a milk diet is given, and its typical canary yellow stools make it possible to do a properly controlled test for occult blood and soluble albumin.

(3) A test diet is then given, either in the form of a single meal or a series of meals. A convenient single test-meal is the following: Bread (may be toasted), 3 oz.; lean beef, underdone (minced if preferred), 2 oz.; milk, 1½ pints; potatoes, mashed with some of the above milk, 10 oz. This can be given as a midday meal, followed by a milk diet for the rest of the day. Before, during, and after the meal a cachet of charcoal is given, in order to mark it off from the preceding and subsequent milk diets. By noting the time of the test-meal and the first subsequent stool which is coloured grey with charcoal granules one can gain a rough idea of the length of time the meal has taken to pass through the alimentary tract.

For some days previously drugs should be withheld, especially oily bodies like olive oil or liquid paraffin, which may appear as excess of fat in the stools; purgatives, too, should not be given, for they may cause a marked irritation of the gut, and the production of considerable quantities of mucus, or they may interfere with the normal digestion of the food. The stools should, of course, be examined as fresh as possible.

At the very outset not a few important deductions may be made from the form, consistency, colour, odour, and general characteristics of the stool, but we must do no more than mention their possibility. Nor can we stay to discuss the sieving or "tamissage" of the stools, valuable though it is where intestinal concretions, "intestinal sand," parasites, &c., are suspected. Let us pass on to a discussion of the macroscopical, microscopical, and chemical examinations of the fæces—the three divisions of a "simple technique."

Macroscopical Examination.

The stool is mixed into a homogeneous mass, either as a whole or in parts (if there is any obvious difference in the naked-eye characters of various parts of the stool). A piece of fæces about the size of a walnut is placed into a conical glass, and with the aid of a glass rod and some warmish water made into an emulsion. Portions of this are poured into a Petri dish, diluted with water, if necessary, and examined against a background partly white and partly black.

Various things may be seen—vegetable debris, tiny brown rods of muscle fibre, actual masses of undigested meat (which occur sometimes in the stools of hungry gourmets who bolt their food), white dots of the so-called "potato granules," parasites, possibly epithelial debris; more notably, typical white fragments of connective tissue, and flakes of mucus, intimately mixed with the fæces, transparent or cloudy, stained greenish yellow or brown with the bile pigment derivatives. Some of these may be difficult to distinguish the one from the other—vegetable debris, parasites, connective tissue, and mucus are not infrequently confused; but experience soon enables one to avoid mistakes, and if there is any doubt, the suspected fragment should be transferred to a watch glass containing a little water and examined microscopically at leisure. A simple microscopic examination is usually quite sufficient to distinguish them. Certain appropriate chemical and staining methods can be used if necessary.[1] The most important abnormal things to notice in this part of the examination are connective tissue, flakes of mucus, and parasites.

Microscopical Examination.

A small amount of the mixed fæces is taken up with a glass rod, put on to a slide and pressed out well with a cover-glass. One or two such preparations may be made from different parts of the stool, and usually it is useful to make an iodine stained preparation, leaving it to stand for about 15 minutes before covering with the cover-glass. Standing out against an amorphous background, one may see, normally: (*a*) elastic tissue fibres (rare and of no pathological significance); (*b*) muscle fibre remnants, small hyaline fragments, stained yellow or brown with bile derivatives, occurring infrequently, not more than one or two to the low power field at most: possibly these are pigmented shells of sarcolemma; (*c*) yellow amorphous masses of soaps and fatty acids occurring infrequently in the preparation; (*d*) vegetable debris, which takes many shapes and is apt sometimes to be confused with parasites and their ova.

Abnormally there may be seen certain food residues: (1) Striated muscle fibre, or muscle fibre only partially attacked by the digestive juices—present in excessive amount, several to the field, and consistently seen throughout the whole preparation. (2) Fat. There may be present globules of neutral fat, flakes of neutral fat or fatty acid, crystals of fatty acids, soap rings or needle crystals. These

* A paper read before the Pathological Section of the Liverpool Medical Institution, March 17th, 1921.

[1] For further details of these examinations, a book such as Cammidge's "The Fæces of Children and Adults" should be consulted.

can be differentiated by certain chemical and staining properties, details of which may be found in the text-books. (3) Starch granules, stained blue with iodine, occurring as single granules; or as "potato granules," with the appearance of capsules enclosing several small granules. Sometimes they stain red owing to the digestion of starch into erythrodextrin.

Mucus flakes should always be microscoped, staining is not necessary. Leucocytes, red blood corpuscles, catarrhal cells from the intestine, triple phosphate crystals, epithelial debris, &c., may be seen entangled in them. It is extremely difficult to recognise epithelial debris or leucocytes in the original preparation if the stool is at all formed. In certain fluid stools, notably the diarrhœic stools of typhoid infections, there may be actually little else save leucocytes in suspension in a very foul and putrid liquid.

Parasites or their ova may be seen, and certain crystals may be present, especially those of triple phosphate, which may be deposited in stale fæces, or may occur in large numbers in the putrid, alkaline stools of certain colites. Some workers suggest that a Gram-stained bacteriological film should be made. Personally, I have found little help from it, and in our present state of knowledge it seems to me not worth while, for clinical purposes, to take time over it. It is another matter if definite bacteria are suspected, such as the typhoid group or tubercle.

Chemical Examination.

The reaction to litmus is taken. One then examines for one normal and two abnormal constituents. The normal constituent is stercobilin or hydrobilirubin, derived from the pigment, bilirubin, of the bile by the reducing action of the intestinal bacteria.

A most convenient test for it is to rub up a little fæces with a saturated solution of mercury perchloride and leave to stand, when after a few hours a more or less intense pinkish-red colour develops. The reaction goes much more quickly at 37°C. If some of the well-mixed fæces and the $HgCl_2$ solution are put into a test-tube, one has also a very convenient method of testing for one of the abnormal constituents—coagluable protein, or so-called soluble albumin.

The difficulty in testing for soluble albumin is to obtain a clear fæcal filtrate. Prof. Ramsden and I hope to publish shortly a test which is time-saving and reliable; but for the present I will only mention the mercury perchloride method described above for stercobilin. The rationale of it is the same as that for the method of clearing coffee with a little egg albumin. A normal stool when mixed with water or a solution of mercury perchloride remains a turbid suspension; if soluble albumin is present, however, the metallic salt precipitates the protein, and the precipitated protein carries down with it the other particles in suspension in the fluid, so that the supernatant liquid, if left to stand, instead of remaining turbid becomes clear within a few hours.

Blood, the other abnormal constituent, must be looked for on a controlled diet, and I generally use Weber's guaiacum test.[2]

One other point that may be mentioned—if trouble is suspected in the large intestine, it is often useful to wash out with normal saline some short time after the passing of a stool, and examine the contents of the wash-out chemically both for blood and for soluble albumin, and (after centrifugalising) microscope the deposit.

Discussion.

The abnormal findings can be divided into two categories: (*a*) absence of normal constituents; (*b*) presence of abnormal constituents.

In the first category comes *stercobilin*. If stercobilin is absent, one may safely draw the deduction that bile is not reaching the intestine. The cause may lie in the liver cell itself, or in obstruction of or in the bile passages. There is, unfortunately, no accurate quantitative method for estimation of stercobilin; however, when it is present, by using a uniform technique, a rough idea may be obtained as to whether there is much less than normal.

In the second category are certain food residues—blood, soluble albumin, and mucus.

Food Residues.

(1) *Connective Tissue.*—If connective tissue reaches the fæces in any marked amount, one can conclude with complete confidence that there is a failure of gastric digestion. The scleroproteins of tendons and connective tissue generally, are left undigested, unless the gastric juice has prepared them for further digestion.

(2) *Undigested Muscle Fibre* (creatorrhœa).—Normally, only occasional remnants or shells of meat fibre are present in the stools. Abnormally, I would mention two important types of case:—

(*a*) In the first type there is considerable excess of muscle fibre, though most of it is more or less attacked by the digestive juices. One may term it "partially digested muscle fibre." A clinical example may illustrate this.

A patient complained of overwork during the war; recently, loss of weight, pain about two or three hours after food, flatulence, nausea, occasional attacks of diarrhœa, severe headaches; marked tenderness to pressure over epigastrium. Blood pressure 220 mm. Urine shows a marked excess of indoxyl. No evidence of gastric or duodenal ulcer. The stools of his usual diet show a markedly alkaline reaction to litmus, enormous quantities of partially digested muscle fibre, definite smell of protein putrefaction, and mucus flakes in excess. On the usual test diet the same picture held, and suggested that for some obscure reason (possibly functional trouble of the pancreas) there was an inability to deal adequately with meat fibre, and secondarily, irritation of the gut by bacterial putrefaction products of this undigested muscle fibre, with resulting colitis, mucus flakes, and probably also some intestinal toxæmia. This view was supported by finding that on a carbohydrate diet with restriction of meat the blood pressure fell within a week to 120 mm. of mercury, the mucus in the stools disappeared, and the general condition improved. He is now practically cured, though it still remains necessary—over twelve months after I first saw him—for him to forgo any carnivorous indiscretions, such as game.

(*b*) The second type shows an excess of meat fibre in the stools, and practically all of it has retained its striations—i.e., true creatorrhœa. This condition is almost invariably met with when there is inadequacy of the pancreatic juice, for the pancreatic secretion is essential for the digestion of the striations. Hence, provided that diarrhœa can be excluded, the appearance of striated muscle fibres in the fæces indicates that there is a pancreatic insufficiency, possibly due to obstruction (as in carcinoma of the head of the pancreas), or maybe to lack of production (as in extensive cirrhosis of the gland).

(3) *Starch Grains.*—These may indicate an ordinary diarrhœa or the condition of so-called carbohydrate intestinal dyspepsia, which occurs especially in children. Here the gut cannot deal properly with the carbohydrates supplied to it, either because they are excessive in amount, or because there is some infection or catarrh of the small intestine. Their presence has no necessary relation to pancreatic disease.

(4) *Fat.*—An important and much discussed matter and one into which many unnecessary complexities have been imported. There are two fundamental questions to investigate here: (*a*) Is there excess of fat (of any or all types) in the stool; (*b*) If so, is it an excess of split or unsplit fat?

(*a*) If a uniform technique is used, as a general rule conclusions quite adequate for all clinical purposes can be drawn from a microscopic examination. Adult stools contain normally 15 to 25 per cent. of their dry weight of "fat," including under this head all substances soluble in ether. On a test diet, if the fat present is above 40 per cent., it is almost invariably recognisable microscopically. Often the limit is even less than 40 per cent. Personally, I do not think that important deductions can be drawn, even if accurate quantitative fat estimations are made, from small variations in fat content. Nor do I think that an accurate determination of the relative proportions of split or unsplit fat gives information at all commensurate with the labour involved.

(*b*) Is it an excess of split or unsplit fat, microscopically? Unsplit fat, of course, means neutral fat—the glyceride of a fatty acid; split fat means fatty acids or their salts—the soaps. Whether the split fat consists of the free fatty acid or the soap depends practically entirely upon the acid or alkaline reaction of the intestinal contents, and therefore, as the important point is to learn whether the neutral fat of

[2] For further details see paper "On Soluble Albumin and Blood in the Stools," THE LANCET, 1920, ii., 291.

the food has been split into glycerine and fatty acid to the usual extent, no clinical purpose is served by distinguishing between the two types of split fat—free fatty acid and soaps. Hence for clinical purposes it is desirable to classify the fæcal fat in the two broad categories of "split" and "unsplit" fat.

The fats are split chiefly by the lipase of the pancreatic juice, aided greatly by the presence of bile; their absorption from the gut depends overwhelmingly on the presence of the bile acids of the bile. However, the intestinal juice appears sometimes to be able to take on the power of splitting fat, and certainly fat may also be split by the action of bacteria in the large intestine.

Thus, one may conclude that (*a*) the presence of excess of neutral fat in the stools probably indicates pancreatic insufficiency, but sometimes shows merely a very rapid passage of food through the gut, as in gastrocolic fistula (on the other hand, even with pancreatic insufficiency, the fat may be split in the small bowel and absorbed, or split in the large bowel and escape absorption); and (*b*) excess of fat, which is split fat, may indicate (1) marked diarrhœa; (2) pancreatic insufficiency (where means other than the pancreatic juice has split the fat); (3) lack of absorption due to absence of bile, or to disease of the gut wall (for example, amyloid disease, sprue).

It is obvious, therefore, that these various factors must be carefully weighed in interpreting an examination of the fat content of a stool, whether with positive or negative indications.

5. *Blood and Soluble Albumin.*—Of these, little must be said, important though they are. There is no need to emphasise the significance of occult blood in the stools of a controlled diet. Soluble albumin, or coagulable protein may come, rarely, from the food "albumins"—in severe diarrhœa, for example, especially in children; more usually it comes from the blood serum of a hæmorrhage, or from serous exudate into the gut. It is so rapidly digested that if present in the stools it indicates exudate or bleeding not too far from the anus, or else a very copious exudate or bleeding higher up the gut. It may occur, notably, in ulceration or carcinoma of the colon.

6. *Mucus.*—Normally the comparatively small amount of mucus secreted by the small intestine is digested before it reaches the ileocæcal valve, and in the large intestine the mucus there secreted is so intimately mixed with the fæces as to be unrecognisable either macroscopically or microscopically. When, however, there is excess of mucus produced, either by infection or irritation, it appears in the stools roughly in one of two forms: (*a*) covering the surface of the stools—maybe forming an actual membrane; or (*b*) small flakes intimately mixed with the fæces.

Broadly speaking, the large bowel is divided into two portions with separate functions. In the cæcum, ascending colon, and part of the transverse colon—the proximal part of the large intestine—churning of the fluid fæces occurs, with the absorption of water. More or less solid parts of fæces are then passed into the distal part of the bowel, whose function is mainly occupied with defæcation. A consideration of this division of function helps in the interpretation of the different appearances of mucus. Excess of mucus produced in the small intestine, or the initial part of the large bowel, will be intimately mixed with the fæces in the form of flakes; mucus produced in excess in the terminal half of the large intestine will tend to surround the formed fæces. It is thus obvious that mucus *flakes* are not directly due to a mere banal constipation. The fæces in the cæcum and ascending colon are fluid, and the mucus incorporated there is the response to irritation of the gut wall, perhaps from bacterial infection, perhaps from damaging chemical products (for example, those of protein putrefaction). On the other hand, mucus surrounding the formed stool is likely to be due directly to constipation. In putrid fluid fæces, as in typhoid, the abnormal mucus may be digested, and not appear in the stools at all.

Summaries of Illustrative Cases.

1. M. C. J., age 45, gastric pain for eight months, jaundice three months. Occasional vomiting, two months. Loewi's adrenalin reaction positive. *Urine:* Diastase index low; no sugar; bile pigments and salts present. *Stools:* No undigested muscle fibre, crystals of split fat in marked excess. No stercobilin. Laboratory report: "Complete obstruction to bile outflow. No evidence of pancreatic involvement." Diagnosis: Gall-stones. At operation a large stone removed from the common bile-duct.

2. M. J., age 54, jaundice four months, loss of weight, no vomiting. X ray showed (1) slight delay in emptying of stomach—no obvious cause; (2) no evidence of gall-stones. Provisional clinical diagnosis, malignant pancreas. *Stools:* Never any undigested muscle fibre, always crystals of split fat in excess, stercobilin present but markedly less than normal. *Urine:* No sugar, diastase normal. Report: "Some obstruction to bile outflow, but not complete. No evidence of pancreatic involvement." Operation: Stone in cystic duct just above the junction with the common bile-duct, impacted, but not completely blocking the bile-duct.

3. M. Q., six months previously insidious development of pallor and emaciation. One month later jaundice appeared, varying in intensity from time to time; liver enlarged but not nodular. No pain, appetite good. *Urine:* 0·83 per cent. sugar, diastase 30 units (normal 10 to 33). *Stools:* Large numbers of striated muscle fibres, split fat in moderate excess, stercobilin present though less than normal. Occult blood present, no soluble albumin. Report: "Pancreatic insufficiency, with some obstruction to bile outflow; occult blood is in favour of malignant disease." Operation (three months later): extensive growth found, involving the head of the pancreas and neighbouring structures. Death two weeks later.

4. Mrs. G., tumour in epigastrium, pulsating on occasion. No jaundice; pain, loss of weight. Clinician's diagnosis: Pulsatile tumour of the liver or pancreatic cyst. *Urine:* Diastase normal, trace of sugar said to have been present in one examination by a clinical clerk, but absent in all specimens sent to the laboratory. *Stools:* Nothing abnormal. Report: "No evidence of pancreatic disease." Operation: Pancreatic cyst as big as a large orange. (Thus in this case the fæcal examination gave no help.)

5. E. M., vomiting, loss of appetite, no blood in vomit. "Could only take fluids." Hard supraclavicular gland on left side. X ray showed a normal stomach. *Urine:* Indoxyl and urobilin in excess, diastase normal. *Stools:* Very alkaline, mucus flakes in great excess, containing many leucocytes and degenerated epithelial cells. No undigested muscle fibre. No blood. Soluble albumin in small amount. Report: "Inflammatory condition of large intestine with some exudate." Clinically it was decided that there was a carcinoma of the colon. Death from pneumonia. Post-mortem refused.

6. E. W., boy aged 12, with diarrhœa. Temperature 100°F. *Stool:* Very alkaline, quite fluid, no mucus; practically speaking, the stool was a suspension of leucocytes in a foul-smelling fluid. Soluble albumin in marked amount, no blood. Report: "Inflammation of gut, with exudate." Further examination showed organisms of *Paratyphoid B*, and the boy's blood gave the agglutination test.

Conclusion.

I have largely dealt with the stools of adults. Children's stools are almost a subject in themselves, and they present many problems not yet fully worked out. Nevertheless, though interpretation is often difficult, particularly in the stools of infancy, in many cases valuable assistance may be looked for from an examination of the fæces, notably in the obscure indigestions of childhood, intestinal catarrhs, and actual organic disease of the alimentary tract.

In conclusion, I would insist that examination of the fæces must be integrated with the clinical findings, usually with a thorough examination of the urine, sometimes also of the blood. All that I would claim for it is that not infrequently it provides data which the clinician finds very valuable in making his diagnosis.

CHARTERED SOCIETY OF MASSAGE AND MEDICAL GYMNASTICS.—The first register of members of the Chartered Society will be published early in the autumn. Members and certificate holders of the Incorporated Society of Trained Masseuses and the Institute of Massage and Remedial Gymnastics are reminded that unless they register before July 15th at the offices of the Chartered Society, at 157, Great Portland-street, London, W. 1, their names will not appear in the first register.

AN UNUSUAL TYPE OF ARRHYTHMIA IN MITRAL AND AORTIC DISEASE

WITH EXTENSIVE MYOCARDIAL DEGENERATION.

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THE following case, which appeared to us to exhibit some features of interest, showed an extensive degree of myocardial disease in a heart so distorted owing to pathological changes that identification of the auriculo-ventricular node and bundle in serial sections was a matter of great difficulty. The fibrosis, which was visible throughout the entire musculature, appeared to have left the fibres of the bundle intact. The clinical features of the case were a little unusual.

History of the Case: Condition on Admission.

The patient, a man of 38, was under the care of Dr. James Collier; he was first admitted to St. George's Hospital on August 31st, 1918, complaining of cough, sleeplessness, and swelling of the legs, having been ill in bed about a fortnight. He gave a history of having had malaria in South Africa in 1899, and a history of rheumatic fever about the same date. He had suffered from shortness of breath and intermittent attacks of swelling of the legs for about three years previous to admission.

On admission on August 31st, 1918, the patient was thin, pale, and obviously ill, with a pulse of 44. The heart was enlarged, the rhythm being irregular; the liver was enlarged, tender, and pulsating; there were moist sounds at the bases of both lungs; the legs, scrotum, and penis were œdematous. Tincture of digitalis was given in the usual doses. On Sept. 3rd the œdema of the genitals had disappeared; on the 9th the patient was not so well, and there was general anasarca; the pulse was slow and irregular from premature beats.

After some days the œdema disappeared, and the patient was discharged on the 29th. There was a well-marked systolic bruit at apex and base, and an aortic diastolic bruit conducted downwards and to the left across the sternum. During the above period the radial pulse varied in rate between 26 and 70 per minute. For the first few days it was between 26 and 40, but on Sept. 3rd it rose to 62, and afterwards continued to average about 70. Nothing further was heard of the patient until he was readmitted on March 3rd, 1919, with considerable œdema of the legs, and complaining of pain over the region of the liver.

On admission the apex beat was in the sixth intercostal space, five and a half inches from the middle line; the force of the impulse was feeble, the area of cardiac dullness was increased considerably to the left of the nipple line. At the apex systolic and diastolic bruits were heard; a diastolic bruit was also audible over the aortic cartilage. The patient was very breathless and complained of continual cough, and there were signs of congestion at the bases of the lungs. Pulsation was marked in the vessels of the neck, and considerable distension of the veins was observed; the radial pulse-rate was between 40 and 50. The patient vomited a good deal after admission and his cough was persistent and distressing; he was too ill to be thoroughly examined. The radial pulse-rate continued to vary between 30 and 50.

Irregular Heart Rhythm.

On March 28th the vomiting had ceased and the cough was better. Examination of the heart showed an irregular rhythm, two beats and then a long pause, and so on. Polygraphic tracings showed the second of the two beats to be well marked in the cardiogram, but very feebly marked in the radial tracing, the beat hardly getting through to the wrist. The first and second heart sounds were distinctly audible, corresponding to each of the two beats, and in the long pauses between the coupled beats a third and shorter sound was occasionally heard. (Fig. 1.)

No murmurs were now heard, the first sound being very short in duration. The patient remained in bed for many weeks, the radial pulse-rate varying considerably, being always slow on account of the failure of the second of the coupled beats of the ventricle to affect the pulse at the wrist, although in some of the radial tracings it could just be detected. He suffered from several syncopal attacks, and during these there was marked slowing of the cardiac rhythm, the radial pulse-rate falling as low as 30, the ventricular rate being double this. He never became completely unconscious, and never exhibited typical Adams-Stokes syndrome. Except for one emergency dose administered hypodermically on admission digitalis was not given. Injections of atropine were without appreciable effect.

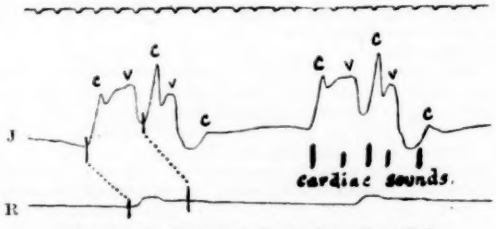

FIG. 1.—Cardiogram. J, jugular; R, radial.

During the last two weeks the œdema had been increasing, and on April 10th there was general anasarca, the swelling affecting the arms and hands and also the upper part of the chest. The pulse-rate had been increasing, and he had been passing very little urine. From this time onwards his condition became rapidly worse, the daily excretion of urine falling to a very few ounces. A few days before death the œdema markedly diminished. Figs. 2 and 3.

It was, unfortunately, not possible to obtain an electrocardiogram, the patient's condition being so

FIG. 2.—Inverted Cardiogram.

grave that he could not be moved from his bed. The accompanying tracings were taken with a Mackenzie ink polygraph 18 days after admission. The arrhythmia is striking, and at first suggests the appearance seen in tracings from patients who have been for some time under the influence of digitalis, and have reached the toxic stage where the familiar coupling of the beats is observed. As has already been stated, however, digitalis was not given on the second occasion of this patient's admission, except

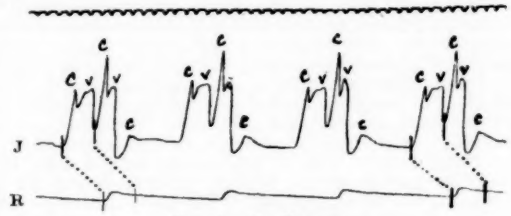

FIG. 3.—Cardiogram.
Pulse rate 32 (radial) Extra-systole not felt at wrist.

for one emergency injection of digitalin, and there was no reason to suppose that he had been previously taking the drug outside the hospital. There is no sign of an *a* wave in any of the tracings, and the jugular pulse is of the ventricular type. It was concluded that the auricles were fibrillating, although the pulse did not at any time show the typical continuous irregularity. On both occasions of admission to hospital there was always an absence

of any presystolic murmur at the apex, although the left auricle was greatly enlarged, and there was an extreme degree of mitral stenosis. The third of the *c* waves, which corresponded with the third sound already mentioned, is apparently due to a second premature contraction of the ventricle, which, although audible to the stethoscope, was never strong enough to affect the radial tracings. The first premature contraction, represented by the second of the *c* waves, can just be detected in places in the radial tracing, but could never be felt in the pulse at the wrist. From the character of the attacks of semi-unconsciousness and the extreme slowness of the pulse during some of these, the condition appeared clinically to resemble that of heart-block, but no evidence appears in the tracings of independent auricular contraction, and the *a.-v.* bundle was subsequently shown to be structurally intact.

FIG. 4.—Microphotograph of a typical portion of the bundle.

FIG. 5.—Microphotograph showing infiltration of leucocytes through the muscle.

Morbid Anatomy.

The heart as submitted for examination was enormously enlarged and weighed over 30 oz. The ordinary broad anatomical relationships were disturbed by a high degree both of hypertrophy and of dilatation. The area including the sino-auricular node had been destroyed in removing the specimen at the post-mortem examination, but since the pericardium was completely obliterated over the greater portion of its surface, and patches of lung tissue were adherent, its exact delimitation would have been difficult in any case.

Right Auricle.—Enormously dilated and accommodated the entire hand when closed. The tricuspid valve orifice admitted all four fingers and the thumb together. The flaps of the tricuspid valve were thickened by old inflammation and fibrosis.

Right Ventricle.—Greatly hypertrophied and dilated. Nothing was seen on naked-eye examination of the endocardium of the ventricle, pulmonary valves, or pulmonary artery, which called for comment.

Left Auricle.—Dilated, but not so much as the right. The mitral valve flaps were thickened and adherent to each other in the form of a rigid button-hole, admitting the tip of one finger. There were some patches of recent endocarditis on the edges of the valves covered with ante-mortem clot.

Left Ventricle.—Hypertrophied and dilated, the aortic valves were thickened, fibrosed, and incompetent. There were one or two small patches of recent endocarditis on the upper surface of the posterior cusp. The chordæ tendineæ were thickened in a degree corresponding with the state of the mitral valve.

Heart Muscle.—The heart muscle generally seemed softer than normal, and in cutting through the wall the larger branches of the coronary arteries were seen to be somewhat thickened and sclerotic. On microscopic examination a very slight degree of fatty change could be made out, and it was not easy to define cross striation in the muscle fibres in all the sections examined.

The adventitia of the vessels all over the heart was proliferated, and in the case of the moderate-sized vessels was generally the seat of collections of small round cells.

Auriculo-ventricular Node.—On cutting serial sections through the septum at the auriculo-ventricular junction, the auriculo-ventricular node was found to show an increased amount of fully-formed connective tissue, while the bundle, in order to reach the ventricular portion of the heart, had to pass through a dense mass of fully-formed connective tissue which was found in the upper portion of the interventricular septum. This had apparently been formed by a new growth of connective tissue, extending from the attachment of the septal flap of the tricuspid valve through the thickness of the septum until it coalesced with the right side of the central fibrous body. This latter structure was distorted by the general hypertrophy and dilatation; instead of being more or less triangular in section, as seen from above it was elongated into a thick band.

Other Findings.

Neither in node nor bundle were any lesions seen of a definite character. The only abnormality found in these structures consisted of a few sparsely scattered small round cells, although the connective tissue in which the bundle was embedded for part of its course showed definite well-marked infiltrations of lymphocytes. A microphotograph of a typical portion of bundle is shown in Fig. 4.

One definite finding was the occurrence of infiltrations of lymphocytes all through both auricular and ventricular muscle, but better marked in the ventricle (Fig. 5). Many of these were associated with the overgrown adventitia of vessels, but in some cases they occurred apart from the vessels. The main artery of supply to the septum showed a high degree of sclerosis affecting the muscular coat.

There was slight ascites, but the peritoneum itself was normal. The liver was of the nutmeg type, showing fatty changes; the spleen was soft and showed the ordinary changes of passive congestion. The kidneys were congested and cloudy, the pancreas was normal. The stomach was considerably dilated and full of greenish fluid with particles of undigested food. The intestines were normal.

We are indebted to the courtesy of Dr. Collier for permission to publish some of the back notes of the case.

LYMPHADENOMA AND TUBERCULOSIS.

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MANY cases have been described in which tubercle bacilli have been found in the lesions of Hodgkin's disease. Generally these cases have shown locally a definite tuberculous lesion, clearly distinguishable from the lymphadenomatous process and often also from the appearance given by tuberculosis in organs not affected by lymphadenoma. Ziegler gives 20 per cent. as the proportion of cases of Hodgkin's disease which die of generalised tuberculosis. The generally accepted theory that such tuberculosis is a secondary infection is one which must remain to a certain extent on probation until the ætiology of Hodgkin's disease is established. In view of the emphasis which has been placed on the difference between the lesions of the two conditions, the following record seemed to be worth publishing, although the conclusions to be drawn from it are not very clear. In this case no gross tuberculous lesion was found post-mortem, the only macroscopic changes being those of Hodgkin's disease of abdominal type. In the affected glands and spleen tubercle bacilli were found in fairly large numbers, for the most part without other cellular reaction than one which appears to be that generally described as peculiar to Hodgkin's disease.

A Case Described

The patient, a man aged 34, was admitted to the Swansea General Hospital under the care of Dr. F. Begg on Feb. 3rd, 1921, as a case of Hodgkin's disease. He had an indefinite history of severe anæmia and abdominal swelling for 12 months. On admission, he was obviously moribund. He was wasted; the skin was of an earthy colour; there was pyrexia, and the breathing was deep and rapid, suggesting acidosis. The spleen was greatly and the liver slightly enlarged. The inguinal glands on both sides were moderately enlarged and also one cervical gland. A blood count (Feb. 4th) showed: Hb. 15 per cent. (Sahli); r.b.c., 1,800,000; C.I., 0·38. The white count gave the very low figure of 630 per c.mm. Differential white count:—

Polymorphs ..	..	67	per cent., or	423	per c.mm.
Sm. lymphocytes	..	29	,, ,,	183	,,
Large ,,	..	1	,, ,,	6	,,
Large hyaline	..	2	,, ,,	12	,,
Basophile ..	..	1	,, ,,	6	,,
		100		630	

There was much poikilocytosis. One normoblast seen. Films showed numbers of Gram-positive cocci and short bacilli.

Post-mortem Examination.

The patient died on Feb. 5th, and a post-mortem examination was performed on the 7th by Dr. A. F. Sladden. The tissues were unusually dry; the amount of blood seemed reduced to a minimum, so that there was little decomposition in spite of a terminal septicæmia. No cultural examination of the organs was made. The brain and meninges appeared normal. The heart was dilated, pale, and flabby; the lungs moderately congested but showing no other abnormality. The large vessels were apparently normal and the thoracic glands were not enlarged. The liver was congested. The intestines showed no gross lesion; and, apart from pallor, no change was seen in the kidneys, pancreas, or suprarenals. The spleen was greatly enlarged, weighing 2¼ lb. It was firm, dark in colour, and somewhat uniformly and closely studded with pale yellowish-grey nodules, the largest being rounded and about ¾ cm. across. Some Malpighian corpuscles could be defined. There was no caseation and no nodule could be seen resembling a tuberculous focus. In addition to the enlarged inguinal glands large clumps were present in the external iliac, mesenteric, and lumbar groups. These glands all presented a similar appearance. Except for some ill-defined masses round the aorta, they were discrete and always pale, showing on section a greyish-yellow semi-translucent homogeneous substance, traversed irregularly by fine paler lines. There was no suggestion of caseation or calcification in any gland. The bone marrow was fatty, films showing scanty large mononuclear non-granular cells.

Microscopic Appearances.

Glands.—The loose periglandular tissue showed extensive recent fibrosis, with formation of a fine reticulum by budding fibroblasts. Various Gram-positive and negative bacilli and a few cocci were found. The gland vessels were greatly increased in number. Many were entirely or partially replaced by a cord of young fibrous tissue, others had their lumen reduced by the intramural formation of a fine reticulum containing numerous small channels lined by a single layer of flat endothelium. In one vessel the lumen was almost blocked by this reticulum, which here contained very large endothelioid cells, staining deeply with hæmatoxylin and greatly resembling "lymphadenoma" cells. A fungoid swelling composed of necrotic cells in a fine reticulum scantily invaded by fibroblasts invaded the lumen of another. Among the dead cells were large round pale cells, resembling the endothelioid cells of a tubercle. The adventitia at the base of the mass showed much loose reticulum formation. No tubercle bacilli were found.

Gland Substance.

The glands themselves were greatly altered, the lymphoid element having almost completely disappeared. Spread irregularly through the gland were a few areas only showing small lymphocytes in the pulp. The reticulum showed hypertrophy, the gland consisting of a meshwork of coarse and fine strands with numerous lined channels. There was slight transformation into fibrous tissue, but otherwise little fibrosis. Among the endothelial cells, the number of which varied greatly in different parts, were large phagocytes with several pale oval nuclei, often containing red blood cells, and some large deeply staining irregular cells with one or more dark nuclei. Throughout there was more necrosis than is typical of lymphadenomatous glands, but no massive death. Eosinophiles were scanty. Tubercle bacilli were found scattered irregularly in the glands. In one large colony in a lobe of the less nucleated type of reticulum there was considerable nuclear debris among the bacilli, but otherwise no more necrosis than elsewhere. Apart from the vascular conditions there was no lesion in these glands which suggested by its appearance a tuberculous process. No other bacilli or cocci were seen in the gland substance, and no polymorphs were present.

Liver.—Lymphoid tissue occurred freely along the vessels, which showed slight changes similar to those of the gland vessels. No tubercle bacilli were found.

Kidney.—Sections from two pieces showed little abnormality. No tubercle bacilli were found.

Spleen.—The main vessels showed the following changes. In the artery there was patchy hyperplasia of the intima, chiefly of the elastic element, and in other parts degeneration of the elastic fibres and fibrosis. The media showed some hypertrophy. The adventitia of artery and vein was the site of new vessel formation (many of these showing obliterative endarteritis) and round cell accumulation with fibrosis. The chief lesions of the spleen itself were essentially the same as those of the glands. The reticulum was greatly increased throughout and the Malpighian corpuscles rarely appeared normal. Almost always there was some proliferation of the endothelium of the central artery and sometimes the lumen was greatly diminished. There was often hyperplasia of all the coats of the vessel, sometimes fibrosis. The lymphoid tissue of the follicles was greatly diminished, disappearing apparently through hypertrophy of its own reticular element. There was much hypertrophy of the reticulum which was on the whole more cellular than in the glands. The pulp contained blood cells, degenerated blood, much pigment, and a great number of very large cells (12–40 μ) of two types. Many of these cells were crammed with degenerated red cells, and also contained polymorphs, eosinophiles, other endothelioid cells, and tubercle bacilli. These phagocytic cells generally had one or two oval, comparatively pale nuclei. The other type stained deeply with hæmatoxylin and showed a great variety of shapes. It had one (generally) or more large nuclei which stained intensely. Occasionally such a cell reached a diameter of 46 μ. Cell inclusions, except pigment, in these were rare. A few eosinophiles could be detected. The spleen also showed small infarcts: areas of extravasated red cells and fibrin, patched with areas of an empty fine reticulum, the whole being surrounded by congested tissue. Tubercle bacilli were found fairly uniformly distributed in the sections, usually singly, or a few together, often inside endothelial cells. In one of five blocks examined several colonies of bacilli could be picked out with the low power objective because of the amount of nuclear debris among which the bacilli lay. Apart from this appearance there was little, if any, more acute necrosis here than elsewhere in the spleen tissue and no special reaction of endothelial cells. There was also in the same block, near these colonies, a lesion which seemed

to me undoubtedly of tuberculous origin, although no tubercle bacilli were found in it and there was no quite typical tubercle formation. It consisted of an irregular nodule near a fibrous trabecula. The nodule was a mass of round, greatly swollen and mainly necrotic endothelioid cells, exactly like those sometimes seen standing out from the lymphocytes in tuberculous glands. There was little fusion of these dying cells, but they, or their spaces, were well defined. A stroma of fibroblasts and fibrous strands was being formed between them. In one place a round cell accumulation, with capillary and fibroblast spread among the endothelioid cells, gave, apart from the absence of giant cells, a fairly typical picture of tuberculous granulation tissue. Large dark cells resembling those described above occurred here in small numbers. This focus was marked off to some extent from surrounding tissue by a congested and fibrous zone. Yet in spite of this localisation and the type of cell present, the lesion was not very different from the general one of the spleen and glands, and it greatly resembled that of one of the gland vessels.

Remarks.

In this case (clinically one of Hodgkin's disease) there are, then, lesions strongly resembling those of lymphadenoma and containing numerous tubercle bacilli. There is also a focus of tuberculous type, but not very characteristic, which showed some resemblance to lymphadenoma. The vascular conditions present might be due to either disease. If this case should be described as one of Hodgkin's disease, then, according to current theory, the tuberculosis is a secondary infection. Tuberculosis terminates many cachectic conditions, but does not, as a rule, select the tissue which is the chief site of the primary disease. In this case, since the abdominal glands of an adult are affected, the selection is more apparent that it would have been in a case of cervical or mediastinal lymphadenoma with tuberculosis. The obvious tuberculosis found post mortem in cases of Hodgkin's disease may have more significance than appears. For one cannot but believe that, if this man's blood destruction had not been so acute, he must have died before long from generalised tuberculosis. If he had the abdominal glands and spleen would hardly have been regarded as the original stronghold of the tubercle bacillus. With regard to the ætiology of lymphadenoma, the terminal septicæmia of this case may possibly be of significance, although the various bacteria found in sections were not specially related to the lesions.

It seems just possible that in deciding against a connexion between the tubercle bacillus and lymphadenoma too much emphasis has been placed on negative results of inoculation experiments. But even if we admit that a true lymphadenoma, not caused by the tubercle bacillus, exists it may well be that the term at present is applied to more than one disease, perhaps including a primary tuberculosis. In the case described above, on histological grounds a diagnosis of atypical tuberculosis seems possible, although it leaves the toxic factor unaccounted for. If this case is not true lymphadenoma, it is yet not without interest in relation to the problem of the ætiology of that disease and its relation to tuberculosis.

I should like to express my indebtedness to Dr. Sladden for much help in investigating the case.

A COURSE IN HELIOTHERAPY.—A clinical course of lectures and demonstrations on heliotherapy will be given at Leysin from August 16th–20th by Dr. A. Rollier and his assistants. An invitation to attend will be sent to any medical man or woman expecting to be in Switzerland, on application to the Secrétariat Médicale du Dr. Rollier, Leysin, Switzerland.

CONFERENCE ON INFANT WELFARE.—An alteration has been announced in the programme of the Second English-speaking Conference on Infant Welfare summarised in THE LANCET of June 18th last (p. 1330). The special medical session, 5.30 to 6.30 P.M., on Wednesday, July 6th, will be devoted to a discussion on "The Uses and Abuses of Dried Milk," to be introduced by Dr. Harold Scurfield, formerly M.O.H. for Sheffield. Various minor alterations of and additions to the programme are also announced.

Medical Societies.

BRITISH CONGRESS OF OBSTETRICS AND GYNÆCOLOGY.

THE first British Congress of Obstetrics and Gynæcology was held in Birmingham on June 3rd and 4th, the following societies taking part in the meeting: Royal Society of Medicine (Obstetrical and Gynæcological Section), Edinburgh Obstetrical Society, North of England Obstetrical and Gynæcological Society, Glasgow Obstetrical and Gynæcological Society, and Midland Obstetrical and Gynæcological Society.

Mr. CHRISTOPHER MARTIN, as President of the Midland Obstetrical and Gynæcological Society, extended a hearty welcome to the visiting societies, and expressed the hope that the Congress would be so successful as to warrant it becoming an annual affair, and the most important meeting of the year for those whose chief aim was the furtherance of British obstetrics and gynæcology.

Dr. EWAN MACLEAN (Cardiff) called the attention of the meeting to the resolution which Prof. W. E. Fothergill and Dr. F. H. Lacey proposed to move—viz., "That in the opinion of this meeting, operations by the abdominal route are quite unnecessary for the treatment of genital prolapse." He thought that the best interests of the profession would not be served by placing this resolution before the meeting, and he proposed that Dr. Fothergill be asked to withdraw it.—Dr. HERBERT SPENCER seconded Dr. Maclean's motion, which was carried, and Dr. Fothergill subsequently withdrew his motion.

Dr. FOTHERGILL, in an opening paper to a discussion upon the

End-Results of Vaginal Operations for Genital Prolapse,

said that the discussion had originated at a meeting of the North of England Society held at Liverpool in December, 1918. Prof. H. Briggs had described the treatment of a case of procidentia in a patient, aged 18, by a vaginal operation combined with ventrofixation. Dr. W. Blair Bell deprecated ventrofixation but advocated a modification of Gillian's operation. Dr. Fletcher Shaw deprecated abdominal operations for prolapse, preferring the vaginal methods used in Manchester. Owing to the divergent opinions expressed, it was suggested that the end-results of these measures should be ascertained and a collective investigation by the Society was proposed. The term "genital prolapse" had a fairly definite connotation all over the world; and medical men constantly use the word "prolapse," as including both so-called vagino-uterine prolapse, and so-called utero-vaginal prolapse. In view of these considerations it was decided at a council meeting of the North of England Society in December, 1919, that the inquiry should include "cases of (1) cystocele, (2) rectocele, (3) prolapsus uteri, and (4) elongated cervix protruding from the vulva." In October, 1920, Dr. F. H. Lacey gave a preliminary report on traced cases operated on at St. Mary's Hospital, Manchester, during the years 1914–15–16. It was arranged, however, to defer further consideration of the subject until the present Congress, in order to obtain the views of British gynæcologists as a whole.

Dr. Fothergill then briefly indicated the steps by which he was led to adopt the technique which he now uses, and paid tribute to the work of the late Sir A. H. Simpson, the late Berry Hart, and especially that of Prof. A. Donald of Manchester. In 1895, owing to the initiative of Donald, the surgical treatment of genital prolapse was already highly evolved and most efficient. For the last 30 years Donald has operated in hospital four days a week and has cured

an enormous number of cases of prolapse by amputation of the cervix, extensive anterior colporrhaphy and his own colpo-perineorrhaphy. The speaker's contribution to the subject was first made in 1907 before the Royal Society of Medicine, when he drew attention to the importance of the parametrium and paracolpos in supporting the uterus, vagina, and bladder. In 1908, before the Edinburgh Obstetrical Society, he pointed out the importance of suturing the parametrium in front of the cervix in the treatment of prolapse. Subsequently he had found that by carrying the incision of anterior colporrhaphy round behind the cervix instead of in front of it, this operation and amputation of the cervix could be conveniently combined in a single step. This operation was demonstrated to graduates at the Manchester Royal Infirmary in March, 1913, and in 1915 the improved technique was described and figured.[1]

The inquiry which he and Dr. Lacey had instituted as to the results of this operation had resulted in 156 replies covering a period of from 4½–7½ years from the date of operation. 150 women stated, without qualification, that they were cured, whilst 6 did not. Of the failures, 2 were subsequently found on examination to be anatomically free from prolapse, giving a total of 97 per cent. cures. As to the age of the patients, one-third had passed the menopause. The combined amputation of the cervix with anterior colporrhaphy had been done in 124 cases. Since their operations, 21 of the women under 40 and 3 of those over 40 have had children and 2 are now pregnant. Of these 26, no less than 23 had had the cervix removed, showing that the operation had failed to prevent pregnancy in nearly a quarter of the women of reproductive age. Thirty children had been born to the 24 patients, and in no case had labour been obstructed. Twenty-three of the confinements were natural, and in seven only were forceps required. Four patients had had two labours with no recurrence of the prolapse, and 17 had had one labour with no recurrence. Dr. Fothergill, in conclusion, observed that, inasmuch as vaginal operations afford for all varieties of prolapse treatment that is efficient and permanent, that does not prevent pregnancy and that stands the test of parturition, in a large proportion of cases, abdominal intervention is unnecessary and undesirable. The latter adds to the risk and discomfort of the patient and involves more trouble and loss of time to the operator.

Genital Prolapse treated by Vaginal Operation.

Dr. F. H. LACEY (Manchester) read a report upon an investigation of 750 patients admitted to St. Mary's Hospital, Manchester, during the years 1914–15–16, suffering from genital prolapse and treated by vaginal operation. The patients were women of the working class, who in many cases were compelled to return to the cotton-mill, munitions, or other heavy work at a short interval after their return home. The figures given consist of the average of all the surgeons on the hospital staff, of whom there were 10 in number, including resident surgical officers. A letter was sent to each patient asking the following questions: (1) "Does the womb keep up well now?" (2) "Have you had any confinements since the operation?" (3) "If so, how many?" (4) "Did you need instruments at any of these confinements?" (5) "Has the womb come down at all after any confinement since the operation?" 521 replies were received, and of these, 455 (87 per cent.) answered the first questions with an emphatic "Yes." Twenty-nine were "improved" but not cured. Twenty-six replied that the operation had not been successful. Of the women of reproductive age, 330 successes bore 67 children (20 per cent.). Instruments were required in 32 per cent. of these. Nineteen "improved" cases bore 6 children (31 per cent.). Thirty-three failures bore 16 children (48 per cent.). These results make it probable therefore that subsequent labour was in many cases the cause of the failure of the operation. One death had occurred during the period under investigation, the cause being pulmonary embolism. Dr. Lacey was of opinion, from a consideration of the figures obtained, that it was unnecessary and superfluous to operate for genital prolapse by the abdominal route, as well as submitting the patient to increased risk.

Prof. ARCHIBALD DONALD (Manchester), continuing the discussion, read a

Short History of the Operation of Colporrhaphy, with remarks on the Technique.

He expressed the opinion that colporrhaphy, in the proper sense of the word, has been more frequently done in Manchester than in any other town in this country. In 1884–87 as a resident surgical officer to St. Mary's Hospital, Manchester, he had been struck by the large number of women attending the out-patient department suffering from serious degrees of prolapse and treated by the insertion of pessaries, some of enormous size. He was of opinion that operative treatment on lines similar to the cure of hernia ought to be possible and successful. When he was appointed surgeon to the hospital in 1888 there was little published in this country to encourage anybody to attempt the operations advocated in America and Germany for the treatment of prolapse. His first operation was undertaken in 1888 for a large cystocele in a woman aged 48. He removed a diamond-shaped area of vaginal mucous membrane from the anterior vaginal wall and the surfaces were approximated by a spiral of continuous catgut in "étage." At his second operation in 1888 the cervix was amputated as the first stage, silver wire being used for the first and last time to approximate the cervical flaps. Anterior and posterior colporrhaphy followed. The posterior colporrhaphy was done in stages from above downwards, a large triangular area of posterior vaginal wall being removed, the apex of the triangle being close to the cervix. The results of these and later cases finally established in the speaker's mind the value of colporrhaphy, but for three or four years he turned his attention to operations for the suspension and fixation of the uterus through the abdomen. He was never satisfied with these in cases of prolapse, and he returned to the vaginal operations, which he had never entirely discarded. For a time vaginal fixation as part of the vaginal operation was practised, but this was abandoned after a few years.

Subsequently, the number of colporrhaphy operations at St. Mary's Hospital greatly increased with changes in the staff, and Walls, Fothergill, Clifford, and Fletcher Shaw have all given practical proof of their faith in the operation as a curative measure. To-day the vaginal route is entirely employed by Dr. Donald in the treatment of prolapse, and he regards buried sutures as one of the most important points in the operation, the continuous "blanket stitch" in the deep tissues being employed. With the aid of a Reverdin needle and the help of a trained assistant the whole operation (amputation of cervix, anterior colporrhaphy, and posterior colpo-perineorrhaphy) can be completed in 30 minutes. In conclusion, the speaker observed that in his opinion there is no operation in which one can guarantee with more confidence a good result than colporrhaphy for vaginal and uterine prolapse.

Dr. HERBERT SPENCER (London) observed that statistics have been described as "lies expressed in terms of figures." He was not able to put forward figures himself, but on the whole he could say that he was fairly well satisfied with vaginal operations for prolapse, and he agreed with Dr. Fothergill that abdominal operations were not necessary. The figures that Dr. Fothergill and Dr. Lacey had given included moderate cases as well as severe, and it must be remembered that any of the various methods advocated are very likely to cure these slight degrees of prolapse. Dr. Spencer

[1] American Journal of Surgery, May, 1915; Journal of Obstetrics and Gynæcology of the British Empire, March–May, 1915.

showed a specimen of a uterus the seat of carcinoma and fibroids, which had been completely prolapsed and which he had removed by vaginal hysterectomy. Some cases of severe complete prolapse he thought could only be cured by vaginal hysterectomy. With regard to Dr. Donald's paper, he observed that operations of a wide plastic nature had been performed in this country in the cure of prolapse since 1883, to his knowledge, and by himself since 1887 at University College Hospital. He was sure that Dr. Donald's method was a good one, but personally he did not use catgut because of certain risks. He employed buried silk sutures as a general rule, and occasionally buried silkworm-gut in old patients. As regards Lefort's operation he had done it a few times, but was not favourably impressed with the method.

Dr. T. G. STEVENS (London) expressed his great indebtedness to Drs. Donald and Fothergill of the Manchester School for all that they had given to the gynæcological world in the matter of treatment for genital prolapse. In London he felt that they had lagged far behind Manchester in this respect. Since 1913 he had followed very closely the teaching described, and he was absolutely convinced that the methods advocated were the best up to date. If failure results it is due as a rule to the patient getting up or working too soon after the operation. Personally he always employed catgut buried sutures in the deep tissues and had found that buried silk or silkworm gut often led to delayed suppuration. Catgut nowadays was fairly reliable, especially if a mild chromacised gut was used. Dr. Stevens also drew attention to the risk of secondary hæmorrhage after Dr. Fothergill's operation. In one or two cases it had been very severe, and came from vessels just below the cervical mucosa. He thought that it was due to spreading apart of the tissues and not to suppuration. He was of opinion with regard to end-results that moderate cases of prolapse do not give quite so satisfactory a cure as severe ones, probably because the operation is not so severe. Also he found that the worse the procidentia the easier it was to cure, because of the ease of obtaining plenty of parametrial tissue. Abdominal operation, in his opinion, played no part whatever in the treatment of prolapse.

Dr. A. E. GILES (London) expressed his appreciation of the figures and results brought forward by Dr. Lacey and referred to the amount of labour required in furnishing such a report. A criticism that he would offer was that it was impossible to gauge the result of an operation by patients' statements. Symptomatic cures were often not anatomical cures. He had noted with interest that amongst the symptomatic failures quoted by Dr. Lacey were several anatomical cures. The converse might also be true. No operation could be curative in *every* case, and for this reason the result should not be guaranteed. In his experience 96–97 per cent. of cases were cured after operation. His practice followed mainly that of his old teacher, Prof. Donald, but he did not think it necessary to amputate the cervix in every case, as the cervix will return to its normal size. He had seen many cases where the cervix had been removed by various surgeons, and in some the results were atrocious. Amputation of the cervix was, however, justifiable in hyperplasia of the vaginal portion in nulliparæ. With regard to Dr. Fothergill's operation he thought that to say it was the *only* method was rather begging the question. There were over 150 different methods of suturing the abdominal wall and one writer had stated that every one was as good as another. In the same way he could claim equally good results in the treatment of prolapse from hysteropexy combined with a vaginal plastic operation.

Dr. J. E. GEMMELL (Liverpool) stated[2] that the total number of cases operated upon by him at the Hospital for Women, Liverpool, from the year 1902 to December, 1917, was 480, that of these 172 had been traced, and that the length of time since the operations varied from 3½ to 15 years, averaging 7 years. The methods of treatment employed were anterior colporrhaphy and posterior colpo-perineorrhaphy (40), interposition operation (27), and anterior and posterior colpo-perineorrhaphies plus ventro-fixation (105). The last-named is used in young women during the fertile period, because the vaginal work may be restricted to moderate removal of tissue; an additional fibro-muscular ligament is introduced, conception and parturition are not affected, and the method of operation stands the test of subsequent parturition. Of the 105 cases so treated 30 had borne children and there had been no return of prolapse. The speaker described in detail his method of performing ventro-fixation.

Dr. WALTER SWAYNE (Bristol) described, with illustrations, the method of operation which he had evolved and which very closely followed that of Dr. Fothergill. He reconstructed as far as possible the original pelvic supports, paying special attention to the ligaments of Mackenrodt or Patterson. A cystocele he regarded as a hernia through the anterior part of the fascia covering the vaginal wall. Similarly a rectocele was a hernia through the posterior part of the fascia of the vaginal wall. His experience exactly coincided with that of the Manchester School, and he was averse to abdominal methods. Anatomically they are not correct procedures. The question raised by Dr. Giles as to the difference between anatomical and symptomatic cures was an interesting one, but after all it appeared to him to be a minute point. Deal with the case by all means on anatomical principles if possible, but above all relieve the patient of her symptoms. He had not had the pluck so far to perform a very severe operation upon women of child-bearing age, and he was of opinion that if it was done the patient should be warned that the result might be marred by a subsequent labour. He had had some experience of Dr. Blair Bell's procedure, but anatomically it seemed to be unsound, although it relieved symptoms.

Dr. C. D. LOCHRANE (Derby) observed that during the past few years he had recorded his results of 350 cases of genital prolapse, but had kept an open mind and given each operation published a fair trial. He thought that the ideal operation should conform to four principles: (1) it should restore the parts as far as possible to the normal condition; (2) it should be applicable to all types of injury and at all periods of life; (3) it should not interfere with pregnancy or cause dystocia; (4) it should be the least dangerous, and, as an addendum, the simplest and cheapest. The operation which conformed in his experience nearest to these axioms was the vaginal plastic method and not any abdominal technique, and during the last six years he had treated less and less cases by the abdominal route and more and more by the vaginal. Although he had never seen dystocia arise from ventral fixation, he had had several cases of recurrence of prolapse following the operation. With regard to the vaginal method he considered that previous preparation of the patient, especially as to sterilisation of the vagina, was most important and should be undertaken three or four days before the operation. Whenever he thought that sepsis was likely his practice was to apply bismuth-iodoform-paste to the tissues previously. When amputation of the cervix was required, he preferred Bonney's technique to the circular method. Further, he never employed buried sutures, but always used a figure of 8 stitch to the perineum.

Prof. HENRY BRIGGS (Liverpool) drew attention to the importance of not losing sight of general principles in an unbounded enthusiasm for any one method, and entered a protest against what he could only think were the exaggerated and incorrect statements of some of the speakers. It was incorrect to think that one method only could cure prolapse, or that one type of suture material, such as catgut, was the only

[2] See also THE LANCET, June 18th, p. 1291.

material admissible. It was very difficult to get at the true facts of the case, just as it was to believe the statement of a man who says that he never gets an incisional hernia after an abdominal operation.

Dr. W. S. A. GRIFFITH (London) referred to cases of prolapse of the vaginal walls following a previous hysterectomy. He personally had had extreme difficulty in dealing satisfactorily with this type of case, and was of opinion that no operation by the vaginal route, short of obliteration of the vagina, could be successful. The abdominal route was perhaps indicated for cases such as these. With regard to the points raised by other speakers, he believed in buried sutures and a wide anterior colporrhaphy in treating ordinary cases of genital prolapse. Retroversion and retroflexion of the uterus per se did not often cause symptoms unless the ovaries were also prolapsed, when operative treatment might be required.

Dr. R. H. PARAMORE (Rugby) drew attention to the complete absence in the case of previous speakers to any reference to the levator ani musculature in the cause of genital prolapse. He was under the impression that myorrhaphy of the levatores ani was important, and was surprised that no mention had been made of this procedure. His own experience was limited to 11 cases, and of these he only could claim one success. In all the others, separation of the levatores had occurred two to three weeks after operation. The speaker referred to Hey Groves's suggestion of separation of the anterior vaginal wall from the urethra, and also to Cuthbert Lockyer's method of dissection of the levatores ani. His own conception of prolapse was that it was a hernia through the pelvic fascia, and he attempted to narrow the ring by cutting down upon the levatores ani, drilling holes through the pubic arch, and approximating the margins of the muscles joining the pelvic diaphragm by a purse-string suture.

Prof. GAMMELTOFT (Copenhagen) expressed surprise at not having heard greater reference to the levatores ani. His method of treating prolapse was first to perform a wide anterior colporrhaphy, as is done at Manchester. Then he dissects the levatores ani and approximates these muscles. He always uses catgut, and has never seen any of the bad results attributed to it. He did not use abdominal operations for prolapse, or agree with them.

DR. J. S. FAIRBAIRN (London) referred to the difficulty of knowing exactly how much tissue to remove in vaginal operations for prolapse in order to avoid an excessive amount of narrowing of the vaginal canal. On one occasion he had, as a matter of fact, completely occluded the urethra, and subsequently had to remove his sutures. He did not remove the cervix in the percentage of cases described by Dr. Fothergill, and could not quite see the necessity for it. He also drew attention to the possibility of secondary hæmorrhages referred to by other speakers, and he himself had had several instances. With regard to the question of anatomical versus symptomatic cures, he would note that there was no fixed anatomy. The cure should be physiological, and, if so, anatomy would not count.

Mr. FURNEAUX JORDAN (Birmingham) stated that for many years he used ventral fixation combined with colporrhaphy, anterior and posterior, but the results from the vaginal plastic operation were infinitely better. A few years ago he had seen Dr. Fothergill operate, and he was so impressed by the method that he had always employed it since. It was a tribute to the operation that since he had used it he had had more gratitude from his patients than from all his previous cases. He was quite sure that the operation could not be done without burying sutures, and if it was proved that catgut is not safe, it should not be employed for this purpose.

Dr. MILES H. PHILLIPS (Sheffield), as a pupil of Prof. Donald and Dr. Fothergill, had in large measure adopted their practice. At the same time he could not assert that he had cured *all* his cases, and wondered if any one method would cure all. The type of case where he failed was the elderly woman with complete prolapse of a small atrophied uterus. In these cases it is impossible to repair the vagina satisfactorily, and he used Mayo's operation of removing the uterus, obliterating Douglas's pouch and suturing the broad ligaments below the bladder.

Dr. T. W. EDEN (London) was glad that Dr. Fothergill had withdrawn his resolution. He thought that perhaps he had tried to devise an operation for *every* case of prolapse. There were a few cases, however, where this was not possible, and where Mayo's operation is good and indicated for choice. It was important, therefore, that we should adhere to the principle of selecting the ideal operation for each individual case. For example, the treatment of prolapse in young nulliparous women occasionally offers extreme difficulty. He recalled such a case in which he had performed an extensive posterior colporrhaphy. The procidentia recurred, and Dr. Cuthbert Lockyer did a ventral fixation. The condition again recurred, and Dr. Eden had recently carried out the operation suggested by Blair Bell of obliterating Douglas's pouch by suturing together the utero-sacral ligaments. The anteversion of the uterus so produced he considered to be important. With regard to Dr. Fothergill's method, he was of opinion that the operation might be improved by associating it with wide separation of the bladder from the cervix, as originated by Cuthbert Lockyer.

Dr. W. H. NEWNHAM (Bristol) observed that in Bristol the abdominal route had been practically abandoned entirely in favour of the vaginal operation for prolapse of vagina and uterus. Personally he always had used silk for buried sutures, and had seen no suppuration which he could attribute to its use. Nobody was infallible, and therefore no man could always guarantee a cure, whatever operation was undertaken.

Replies to the Discussion.

Prof. FOTHERGILL, in reply, said that he had never seen or heard of any disastrous cases of secondary hæmorrhage following the vaginal operation. Undoubtedly it occurred, but it could always be controlled, and he attributed it to sepsis. With regard to interposition of the uterus, he thought it a bad operation. It was attended by some mortality and a large proportion of unpleasant sequelæ, to say nothing of recurrences. He had not mentioned suture of the levatores ani muscles, as he considered it a minor part of the operation. It was always done in Manchester, and was included under the term, "repair of the perineum." He quite agreed that some of the most difficult cases were those of prolapse of the vagina following hysterectomy. In young women, also, the operation could be very difficult.

Dr. LACEY, in reply, said that in Manchester no special preparation of the patients was undertaken. The women were admitted 24 hours before operation, and simply had a douche of cresol or perchloride of mercury. The vulva was covered by a perchloride-soaked gauze pad. He could not understand how Dr. Lochrane achieved his results without burying his sutures.

Prof. DONALD, in reply, thanked Dr. Stevens for his very kind remarks. With regard to vaginal plastic operations for prolapse, there was no doubt that hæmorrhage did occasionally occur, and it spoilt one's operation. He employed a deep figure of 8 suture to control it, and amputated the cervix by Bonney's method. As to the operation described by Dr. Gemmell, he would like to note that it was originated by the late Sir J. Sinclair. Dr. Miles Phillips had drawn attention to the possibility of subsequent prolapse of the pouch of Douglas. In reply he would say that if colporrhaphy is carried sufficiently high it cannot occur. With regard to hysterectomy as a cure for prolapse he could not speak in favour of it, and had seen no more deplorable cases than those of prolapse of the vaginal walls containing coils of intestine occurring subsequently to vaginal hysterectomy. Again, as to the question

of whether the uterus is subsequently anteverted or retroverted, he did not think that it mattered at all as long as it did not prolapse.

This concluded the business of the morning session. At 1 P.M. a lunch took place at the Queen's Hotel to members of the visiting societies, at the invitation of the members of the Midland Obstetrical and Gynæcological Society.

Condition of Sutures after Cæsarean Section.

At the afternoon session, with Dr. CARLTON OLDFIELD, President of the North of England Obstetrical and Gynæcological Society, in the chair,

Dr. CLIFFORD WHITE (London) showed two uteri removed at varying intervals after Cæsarean section, to show the condition of the linen-thread sutures. Dr. White referred to the recent discussions on rupture of the Cæsarean section scar opened by Mr. Eardley Holland and Dr. Munro Kerr, when the opinion was expressed that a non-absorbable suture gave the most firm union in the wall of the uterus after Cæsarean section, and that if a non-absorbable suture was used any weakness of the scar was the result of sepsis. The speaker brought forward the specimens to prove that, although he considered a linen-thread suture by far the best to employ in suturing the uterus, it was not ideal, one of its defects being that it may subsequently work its way towards the endometrium and cause menorrhagia, acting like a seton. The first specimen demonstrated the results of infection of stitches, and the resulting weak scar, which consisted almost entirely of peritoneum. The uterus was removed from a primigravida, aged 24, on the twelfth day after Cæsarean section for pelvic contraction, the patient having been 30 hours in labour. Intestinal obstruction developed from adhesion of three loops of gut to the edges of the abdominal incision and one coil to the uterine incision. The linen-thread sutures were lying loose on the peritoneal surface, and had cut through the whole of the wall of the uterus except its peritoneal covering. The case had run practically an afebrile course throughout. The patient made a good recovery after hysterectomy and free drainage. The second specimen was removed 17 months after Cæsarean section performed for labour obstructed by a cervical fibroid. The fibroid was not removed at the original operation, owing to the condition of the patient, who had been in labour 20 hours. Subsequent to the operation she complained of pelvic pain and menorrhagia. Hysterectomy was performed, and the uterus after removal showed a fibroid measuring 9 by 6 by 6 cm. in the cervix, just above the external os. The muscular wall of the uterus was firmly united in its whole thickness, but linen-thread sutures were appearing through the endometrium. Several could also be seen deeply embedded in the muscular tissue.

Dr. EWAN MACLEAN showed a specimen of a uterus removed four months after Cæsarean section, performed for obstructed labour, due to an intramural fibromyoma, and persistent transverse position. The uterine wall had been originally sutured with interrupted stitches of No. 4 silk, hysterectomy not being possible at the time owing to the patient's general condition. Section of the uterus after the second operation showed the uterine wall well healed. Microscopically, one of the suture sites on examination showed well-marked areas of round-celled infiltration as the result of the continual presence of the foreign irritant. Phagocytes were also seen. Section of the uterine wall, at the request of various members of the congress, was performed, and showed the silk sutures in situ without any absorption.

Dr. WALTER SWAYNE referred to a case of vesical calculus occurring in his practice after the use of silk sutures in a pelvic operation. He thought it probable that the bladder had been wounded on this occasion. His present technique always involved the use of catgut ligatures.

Dr. E. O. CROFT (Leeds) stated that he had had some experience of examining uteri after Cæsarean section had been performed, and he had found the whole of the silk absorbed. He also had had a case of vesical calculus following operation, but he still employs silk as a suture material, and gets good solid union. He believed that it was *slowly* absorbed, but its great value in Cæsarean section is that it persists until the uterine wall is healed.

Dr. HERBERT SPENCER was glad to hear this eulogy of silk for sutures. With regard to its disappearance, he had noted it on occasion completely to disappear in three months. On the other hand, he had known it persist for 17 years. Patients undoubtedly differ in this respect. He advocated silk of the "floss" type, and fairly thick sutures should be used. On only one occasion had he seen any adhesion of omentum or intestine to the scar.

Dr. EARDLEY HOLLAND (London) said that he had nothing new to add to what he had stated a year ago, when he thought that he had proved that cat-gut was not the best suture material for the uterine wall, owing to the risk of subsequent rupture. Mild sepsis could arise without any evidence of clinical value, as in one of Dr. Clifford White's cases.

Dr. MILES H. PHILLIPS did not believe that silk was ever absorbed.

Mr. FURNEAUX JORDAN thought that, theoretically, silkworm gut was the best material to use, and his views coincided with those of Dr. Eardley Holland.

Dr. EWAN MACLEAN exhibited a specimen showing

Combined Fibromyoma and Carcinoma of the Uterus,

removed from a multipara, aged 53. Pelvic pain of indefinite duration and irregular uterine bleeding of six months were the outstanding features. Total hysterectomy was performed, and the uterus showed a large cervical fibroid, 1½ inches diameter, and an advanced carcinoma of the corpus uteri. The speaker observed that in 500 cases of fibromyoma uteri which he had treated he had only noted concurrent carcinoma in two cases, 0·4 per cent. Kelly and Cullen in 1400 cases had found cancer of the uterine body in 1·78 per cent., and of the cervix in 1·28 per cent.

Dr. HERBERT SPENCER was surprised to hear that Dr. Maclean had met with so few examples of concurrent fibroids and carcinoma uteri. He had seen many cases and, in fact, many years ago read a paper advocating total hysterectomy in cases of fibroids on account of this very risk. He had noted six examples of unrecognised and early carcinoma in 200 cases of fibroids.

Dr. F. EDGE (Wolverhampton) had had six cases of carcinoma of the cervix in one year, subsequent to subtotal hysterectomy, and was of opinion that Dr. Herbert Spencer was right in his contention.

Dr. J. S. FAIRBAIRN's experience differed from the previous speakers, and he thought that the combination was very rare. He had only met with one example, and he reserved the right of performing subtotal or total hysterectomy for fibroids, as circumstances demanded.

Dr. HAROLD CHAPPLE showed a specimen which he considered to be a

Full-term Ovarian Pregnancy,

removed in March, 1921, from a patient, aged 33. The patient's last menstrual period occurred from Feb. 29th to March 3rd, 1920. Fœtal movements were felt in September, 1920, but had ceased since November, 1920, when there was a rather indefinite history of false labour. When the woman was examined on March 2nd, 1921, a tense cystic abdominal swelling was present. The fœtus was not definitely palpable, and no uterine contractions, uterine "souffle," or fœtal heart was audible. The uterus lay on the right side of the tumour and was not enlarged. At operation the tumour was densely adherent to many abdominal structures—transverse colon, omentum, for example. The left ureter passed over the antero-lateral aspect of the mass, and the corresponding round ligament lay in front. The left Fallopian tube was cut at the uterine attachment,

and could be traced over the surface of the gestation sac. The uterus and right appendages appeared to be normal.

Professor GAMMELTOFT asked whether an X ray examination of the patient had been made previous to operation.—The reply was in the negative.

Dr. CUTHBERT LOCKYER (London) suggested that the specimen might be a tubo-ovarian rather than purely an ovarian pregnancy.

Dr. HERBERT WILLIAMSON (London) suggested that the specimen be referred to the Pathological Committee of the Section for detailed examination and report.

The proposition was accepted, and upon the proposal of Dr. THOMAS WILSON (Birmingham) the pathologist already at work upon the specimen will be invited to join the Committee.

Dr. GILES proposed that the report of the pathologist be received before the Committee met. This was eventually agreed to.

Dr. GILBERT I. STRACHAN (Cardiff) showed

Microscopical Preparations of an Early Ovum,

computed as being 16 to 18 days old. The specimen was obtained as the result of an abortion in a patient who had not missed a menstrual period. The ovum was discovered in a mass of blood-clot, passed per vaginam, and subsequently examined in detail. The small chorionic sac, about the size of an average index finger-nail, was hardened before section. Microscopically, the gestation sac shows amnion and well-marked chorionic villi. The section shown was taken through the cephalic flexure, and showed the early differentiation of the nervous matter into grey matter and white matter.

Dr. F. J. BROWNE (Edinburgh) read a communication upon

The Pathology of Syphilis of the New-born.

The paper was based upon the detailed macroscopic and microscopic investigation of 35 syphilitic fœtuses, and was illustrated by lantern photographs of the different viscera. The speaker drew attention to the failure of the Wassermann reaction in the diagnosis of fœtal syphilis, since on many occasions it is repeatedly negative in both mother and child when undoubted evidence of the disease exists on pathological investigation of the organs. The viscera which give most important evidence are the liver, spleen, kidney, suprarenals, and lung. The placenta may or may not show lesions, and Dr. Browne had been unable to demonstrate the presence of the *Spirochæta pallida* in any of the placentæ that he had examined. The speaker then described in detail the appearances which are diagnostic of syphilis in the various fœtal organs.

Dr. CARLTON OLDFIELD (Leeds) thought that one very important fact which had resulted from Dr. Browne's paper was that the diagnosis of syphilis as a cause of stillbirth cannot be made without a very exhaustive investigation.

Professor GAMMELTOFT agreed with Dr. Browne that neither examination of the placenta nor the Wassermann reaction can be relied upon in the diagnosis of fœtal syphilis. He considered, however, endarteritis of the vessels of the umbilical cord was a very important diagnostic point.

Dr. EARDLEY HOLLAND congratulated Dr. Browne upon his excellent paper. Personally he had been interested for some time in the stillbirth problem, but his investigations had been confined to viable and not macerated fœtuses. The problems he had set out to investigate were two—viz., the incidence of fœtal syphilis as a cause of stillbirth and how to diagnose syphilis in the absence of spirochætes. Formerly the percentage of fœtal deaths due to syphilis was thought to be as high as 50. Lately, however, it has been proved by Whitridge Williams and others that 15 per cent. is nearer the mark. His own investigation in 37 cases had been confined to the following points: (1) the Wassermann reaction in the mother, (2) the presence of chondro-epiphysitis in the fœtus, (3) enlargement of the liver, (4) enlargement of the spleen, (5) examination of the placenta. In the case of the Wassermann reaction he had found it positive in the mother in 97 per cent. of the cases investigated. Chondro-epiphysitis was also present in 97 per cent. of the fœtuses. The spleen was enlarged in every case and the liver in nearly all cases. A difficulty arose with regard to the weight of organs, in that there is at present no absolute standard. It was necessary to consider, therefore, the ratio of the weight of the liver and spleen to that of the fœtus, and this is the line he is now taking. If both organs are enlarged, Dr. Holland considered it a very important diagnostic point. The largest spleens occur in cases of general œdema of the fœtus. As regards the placenta, naked-eye appearances are of no value. Typical microscopic appearances, however, were present in 67 per cent. of the cases examined. In all these, spirochætes had been demonstrated in the tissues. In the case of 263 still-born fœtuses where spirochætes could not be found, 25 were considered worthy of detailed investigation. Five of these showed certain evidence of syphilis, in spite of the apparent absence of spirochætes.

Dr. G. I. STRACHAN agreed with Dr. Browne as to the difficulty of diagnosing fœtal syphilis from an examination of the placenta. Indeed, on one occasion, when asked to obtain a syphilitic placenta, he had had the greatest difficulty in finding one. He considered, however, that examination of the umbilical cord was most important, even if the Wassermann reaction was negative. Spirochætes are demonstrable in the arterial walls, as well as endarteritis. From the examination of 100 cases of stillborn fœtuses, he believed that syphilis is a very rare cause of antenatal death.

Dr. WALTER SWAYNE, from an investigation of the Wassermann reaction in the case of new-born infants, was of opinion that syphilis is much less common as a cause of infant death than is suspected. Certainly a positive Wassermann reaction is much more difficult to obtain in new-born infants, even if obviously syphilitic, than in adults.

Extra-Uterine Pregnancy.

Dr. GORDON LUKER (London) read a Short Review of Cases of Extra-uterine Pregnancy admitted to the Gynæcological Department of the London Hospital during the Years 1913 to 1920. 253 cases of extra-uterine gestation were admitted to the hospital during the period in question. The age of the patients varied from 18 to 52, the latter being a case of secondary abdominal pregnancy with death of the fœtus some years previously. Operation was performed in 240 cases. Acute rupture of the tube was noted in 68 cases; tubal mole was found in 51 cases; tubal abortion occurred in 29 cases. Of the 240 operations, 37, or 15 per cent., were special emergency operations, in which the condition of the patient demanded immediate interference. Six deaths occurred, 3 from shock and hæmorrhage, 1 from pulmonary embolus, 1 from broncho-pneumonia, and 1 from peritonitis. Of the former, 1 death occurred in a patient who was not operated upon; 2 deaths from shock and collapse occurred within 12 hours of operation, and raised the question whether it is advisable to delay operation in some cases where shock is profound. Of rare conditions, 3 cases of pregnancy in a rudimentary horn were noted. In a more detailed examination of 42 cases admitted in the year 1920 it was found that in 30 per cent. no previous pregnancy had occurred. Some considerable period of sterility had generally elapsed since the last confinement. There were 2 cases of repeated tubal pregnancy, and inflammation in the pelvis or other tube was definitely noted in 11 cases. As to the symptomatology, Dr. Luker found that in 28 cases—i.e., 66 per cent.—the ordinary history of amenorrhœa was obtained. In 10 cases a period had not been missed—that is to say, bleeding occurred at or within a month from the last menstrual period. In 4 cases

no bleeding at all occurred up to the time of operation. In one of these cases the abdomen was full of blood which had come from a ruptured Graafian follicle, and no evidence of pregnancy in the tube or ovary could be found. Where no bleeding from the uterus occurs it is probable, therefore, that either an atypical condition is present or that the ovum is still living. In nearly half the cases acute pain occurred as the first symptom. In several a dull "girdle" pain was complained of, and was found to be of some value in assisting diagnosis. The passage of a decidual cast of the uterus is pathognomonic of tubal gestation, and when carefully looked for can be found in nearly half the cases. It is shed more often after than before operation. The differential diagnosis from salpingitis, a small ovarian cyst, and appendicitis is often difficult, the pulse-rate being the most useful guide. Any considerable rise of temperature points to an inflammatory condition rather than to extra-uterine gestation.

Dr. LAPTHORN SMITH (London) referred to several cases where diagnosis had been difficult, and urged the importance of early operation when diagnosis was in doubt.

Dr. C. E. PURSLOW (Birmingham) thanked Dr. Luker for his valuable record of an unusual number of cases very concisely put. He referred to rectal tenesmus as being an important symptom, although occasionally diagnosis may be very difficult. For example, he had met with cases of typical uterine abortion associated with a tubal mole.

Dr. EARDLEY HOLLAND referred to the difficulty of diagnosis, inasmuch as the typical signs of amenorrhœa, hæmorrhage, and pain are not always present. With regard to the causation of tubal gestation, lately he had been examining the opposite tube for signs of inflammation, and had found it in three-quarters of the cases investigated.

Dr. A. E. GILES referred to the two schools of thought that exist with regard to the causation of tubal gestation. The one believes that the tube is normal, and the other that it is diseased in all cases.

Dr. HERBERT WILLIAMSON drew attention to the difficulty in diagnosis between ectopic gestation and theca-lutein hæmatoma. In the latter the menstrual period is often late, there is acute abdominal pain, followed by hæmorrhage, and the picture is thus typical of tubal gestation.

Dr. CARLTON OLDFIELD also referred to the point of diagnosis raised by Dr. Williamson, which he considered very important. Repeated attacks of pain are more suggestive of hæmatoma than tubal gestation.

Dr. W. S. A. GRIFFITH thought that the breast changes might prove useful in the diagnosis between these two conditions.

Dr. HERBERT WILLIAMSON pointed out that breast changes also occur in the case of lutein cysts due to the stimulating action of lutein.

Dr. WALTER SWAYNE showed a specimen of a malignant neoplasm involving the small intestine, which he had removed from a nullipara, and which had been reported to be chorion-epithelioma by the pathologist to whom the specimen had been submitted.

Dr. T. G. STEVENS said that if the diagnosis was accepted it was a most important specimen. Personally he believed that it was a carcinoma, and in the section that he had examined no syncytium was present. The only thing suggestive of chorion-epithelioma was the large amount of hæmorrhage into the tissues. The specimen was referred to the Pathological Committee of the Royal Society of Medicine, Obstetrical and Gynæcological Section.

Prof. HENRY BRIGGS exhibited specimens and illustrations showing the pathology of various uterine polypi.

This concluded the business of the Afternoon Session. A dinner was held at the Queen's Hotel at 7.30 P.M., at which over 60 members of the Congress were present.

On June 4th, at 10 A.M., gynæcological operations were performed at the General Hospital, Birmingham, by Mr. Beckwith Whitehouse, and at the Women's Hospital by Dr. F. Edge and Mr. J. T. Hewetson. At the Queen's Hospital, by invitation of Dr. Purslow, Prof. Fothergill demonstrated his operation for the cure of genital prolapse.

Golf and excursions to places of interest were arranged for the afternoon.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OPHTHALMOLOGY.

EXHIBITION OF CLINICAL CASES AND SPECIMENS.

A CLINICAL meeting of this Section was held on June 10th, Mr. W. T. HOLMES SPICER occupying the chair.

Speculum to Prevent Pressure on Globe.

Dr. R. WALLACE HENRY showed a speculum which he had designed and used for the purpose of preventing a patient pressing his eyelids together and thus exerting pressure on the globe after an opening for any purpose had been made. He had used it with decided advantage after many cataract extractions, and since employing it he had lost no vitreous in any case. His custom was to leave the speculum in position until the extraction of the lens and the toilet was completed. The device was favourably received.

A Desk for Myopes.

Dr. F. H. MOXON exhibited a desk which he had designed for the use of children who were predisposed to myopia. He had found that children who at school persistently applied the eyes close to the paper being written on or the book being read, later developed myopia, even though examination showed them to have only slight hypermetropia or hypermetropic astigmatism. This apparatus keeps the eyes at a certain distance from the book by means of a glass screen. The use of it successfully broke the habit of close application of the eyes after a short time.

Acute Macular Disease.

Dr. RAYNER D. BATTEN read a note on two cases which he showed of acute macular disease. He said that cases frequently occurred in which changes in the macula were the only evidence of disease and failure of sight unassociated with other forms of retinitis. There was a great discrepancy between the physical signs, as shown by the ophthalmoscope, and the symptoms. When a really good light was available, fine pigment changes which now escaped observation would be visible: these were better seen by looking to one side of the macula than by looking straight at it. The two acute cases he now showed were not unlike those in the familial amaurotic idiocy in regard to the fundus changes. Causes at work in the cases he had so far seen had included pyorrhœa, suppuration of nasal sinuses, gonorrhœa, influenza and other illnesses, and pregnancy.

Fundus Changes in Three Brothers.

Mr. W. H. MCMULLEN showed three brothers with fundus changes of differing character, but with one feature in common—viz., the development of abnormal connective tissue, either on the surface of the retina or the vitreous. There were several possibilities: (1) that the changes were of inflammatory origin; (2) that they were degenerative in nature; (3) that they resulted from intra-ocular hæmorrhage; (4) that they were due to developmental defects. He regarded them as cases of atypical retinitis proliferans. The brothers were members of a family of 13 children (9 boys, 4 girls). Three of the boys died between the ages of 2½ and 5 years, and of the six surviving boys, four had defective sight. No female in the family had bad sight. Three great grand-aunts died blind.

Mr. G. WINFIELD ROLL exhibited a patient showing macular changes. There could be seen a circular

plaque of what appeared to be organised fibrous tissue in each eye. There was complaint of failure of sight during seven years, which had become worse in the last two years. The field for white and red was practically normal, but the patient scarcely perceived yellow or green at all. In one eye there appeared to be a hole in the fibrous tissue.

Other cases shown included one, by Miss MANN, of an atrophic condition of the iris; of an unusually large cyst of Moll's gland by Mr. M. S. MAYOU; and by Dr. R. L. REA a case of retinal disease of doubtful character.

A New Surgical Lamp.

A new lamp, called the "Scialytic" lamp was on view, and was demonstrated on behalf of the makers. It has been specially designed for surgical and laboratory work.

SOCIÉTÉ DE THÉRAPEUTIQUE DE PARIS.

AT a recent meeting of this Society Mr. TIFFENEAU read a paper on

Hyoscyamine and Atropine

in which he stated that hyoscyamine, the principal alkaloid in belladonna, was twice as active as atropine, which was a racemic alkaloid composed of equal parts of lævorotatory and dextrorotatory hyoscyamine. While the two alkaloids, atropine and hyoscyamine, presented considerable differences as regards their peripheral effects, they appeared to be equally active in their toxic action on the central nervous system, as Cushny had shown. From an economical standpoint the substitution of hyoscyamine for atropine would be of great advantage, as it would render laborious manipulations unnecessary and save twice as much of a product which had to be imported from abroad (Egypt and India).

The Use of Lysidine in Chronic Rheumatism.

MM. BITH and BOURNIGAULT stated that bitartrate of lysidine, which had been used as a remedy for gout and rheumatism in Germany from 1892–9 by Ortowski, Mendelssohn, Wolf, and Grawitz, was a white, tasteless, inodorous powder, very soluble in water and of only slight toxicity. Clinically it appeared to diminish the pain in chronic rheumatism and to improve the functional movements without having any action on the deformities. Chemically it had an action on the general nutrition characterised by a rise in the nitrogen coefficient from 82 to 85 per cent. in man and from 85 to 89 per cent. in woman. It had no effect on the elimination of phosphorus. It had considerable influence on the elimination of chlorides, which increased from 11·70 g. to 14·70 g. and 13·50 g. in man and from 8·96 g. to 12·16 g. and 12 g. in woman. It had an important effect on the elimination of purin bodies, especially uric acid, and to a less extent of the purin bases. In the blood there was a diminution of the total nitrogen, especially the residual nitrogen. The drug did not appear to have any bad effect on the kidneys, for albuminuria present before the treatment did not increase.

Decalcification and the Need of Calcium in Tuberculosis.

MM. RENÉ LAUFER and L. LEMATTE, after alluding to Mr. Laufer's recent communication on this subject,[1] stated that in practice 1·75 g. to 2 g. of calcium were sufficient for the needs of the tuberculous subject, and that the other minerals, such as magnesium, sulphur, potassium, iron, silicon, &c., were equally indispensable.

MM. GASTON-DURAND and S. NEMOURS-AUGUSTE read a paper on

The Action of Diathermy on the Post-operative Sequelæ of Appendicitis

in which they stated that bipolar application of a strong high-frequency current had a good effect on the pain and digestive disturbances caused by chronic epiploitis which fairly frequently persisted after an operation for chronic appendicitis. The method was specially suitable for cases in which clinical and radioscopic examination showed no evidence of perityphlitis or pericolitis, or as a palliative method when the patient refused another operation.

The Use of Enemata of Ox-bile for Constipation.

Mr. G. LEMOINE, of Lille, stated that he had obtained the best results in the treatment of constipation in adults by an enema of 200 g. of boiled water containing two or three tablespoonfuls of glycerinated ox-bile. In infants of 2 or 3 months and upwards he had obtained equally good results by using a ball syringe containing a teaspoonful of glycerinated ox-bile mixed with water.

[1] THE LANCET, 1921, i., 1244.

Reviews and Notices of Books.

MEDICAL THERAPEUTICS OF THE EAR, NOSE, AND THROAT.

Précis de Thérapeutique Médicale Oto-Rhino-Laryngologique. Par G. DE PARREL, Ancien Chef de Clinique à l'Institution Nationale des Sourds-Muets de Paris. Paris: A. Maloine et Fils. 1921. Pp. 670. Fr.28.

THIS is a colossal treatise on the medical treatment of disease of the throat, nose, and ear, wherein all descriptions of operations are omitted, except for some minor surgical procedures. Moreover, no attempt is made even at a thorough discussion of the indications for operation. This limitation of scope naturally diminishes the value of a work on the therapeutics of regions where the treatment is now so largely surgical, but we obtain a large amount of sound advice and a number of useful prescriptions.

The first part of the book, on "General Considerations and Pharmacology," is a kind of catalogue of the drugs in common use. The second, and longest, part is devoted to the treatment, respectively, of diseases of the ear, nose, pharynx and larynx, beginning in each case with an account of the various methods of applying medicaments to these regions, and of minor manipulations. The treatment is, on the whole, in accord with English practice, but, as is usual in French literature the only treatment of hypertrophied tonsils described is "morcellement" under local anæsthesia. A section on vaccine therapy by Dr. Michel Copendy contains a generous appreciation of the work of British investigators; the writer insists on the greater efficacy of sensitised vaccines and claims surprising results in the treatment of such diseases as middle-ear suppuration and nasal sinus disease. A detailed discussion of voice-training and the treatment of vocal defects is followed by an account of the teaching of lip-reading, which the author is well fitted to describe by reason of his connexion with the Deaf and Dumb Institution of Paris. But between these sections is a long chapter on re-education of the deaf which will, we fear, fail to convince the sceptical of the value of this form of treatment. The section on electrotherapy is disappointing and, after a short account of treatment by X rays and radium, is followed by a long chapter on balneotherapy, which is very popular in France. This chapter is perhaps the most interesting of all to the English reader, and should be a useful guide to those wishing to send patients with throat affections to the French spas.

The book, as a whole, suffers from being too long, and too voluminous; the more strictly surgical affections, such as tumours, might with advantage have been entirely omitted.

HYGIENE AND PUBLIC HEALTH.

Manual of Public Health. Fourth edition. By W. G. AITCHISON ROBERTSON, M.D. London: A. and C. Black, Ltd. 1921. With 25 illustrations. Pp. 260. 10*s.* 6*d.*

PREVIOUS editions of this book contained accounts of medical jurisprudence, toxicology, and public health combined in one volume. The present edition is issued in two parts, one dealing with medical jurisprudence and toxicology and the other with public health, and it is with this latter volume that we are at present concerned. Presumably, Dr. Robertson had in mind, when writing the book, the needs rather of the student of medicine than of the candidate for the diploma in public health, since the work appears to be well suited for the former purpose, but is not sufficiently comprehensive for the latter. He has presented in a readable form a brief survey of the more important features of hygiene and public health. We are, however, unable to endorse

certain of his statements. In discussing the theory of aerial convection of small-pox, for example, he says:—

"Many affirm that the infection is also carried through the air for considerable distances, basing their assertion on the fact that infection has spread in many cases for a distance of fully half a mile around small-pox hospitals. In many of these cases, however, the influence of personal intercourse has had much more to do with the spread of the disease than aerial convection, and in many hospitals laxity regarding isolation has been great."

It would be interesting to know on what data the author bases this assertion. It is true that the aerial convection theory has not received universal credence, but, in the present state of our knowledge, it is not possible to prove that it does not take place, and it is the hypothesis which best fits the facts recorded by some of our ablest epidemiologists.

The section on sanitary law is, in our view, unsatisfactory. No distinction is made between the laws regulating sanitary matters in England and Wales, Ireland, or Scotland. A subject like the law does not admit of such haphazard treatment. On the whole, however, medical students will find this manual serviceable and clear.

Hygiene. Ninth edition. By J. LANE NOTTER and R. H. FIRTH. London: Longmans, Green and Co. 1921. With numerous illustrations. Pp. 540. 10*s.* 6*d.*

IN the ninth edition of this elementary book on hygiene, by the authors of a standard text-book on the subject, little change has been made in the general plan. It has, however, been found necessary to revise or rewrite certain parts in order to bring them up to date. Thus, the sections dealing with the theory of dietaries, the treatment of sewage, and the infectious diseases have been modified, while, owing to recent legislation, that on sanitary law has had to be amplified. A short section on the sanitation of camps has been added, and a new chapter on child welfare and school hygiene introduced. These modifications and additions enhance the value of an excellent treatise. The authors have compressed a vast amount of useful and interesting information into a relatively small space, and the book can be confidently recommended to the student of hygiene and public health.

Barrier Charts for Health Officers. By S. H. DAUKES, M.B., D.P.H., &c. London: Baillière, Tindall and Cox (for the Wellcome Bureau of Scientific Research). 1921. With 4 folded Charts. 3*s.* 6*d.*

Dr. Daukes has produced in the form of four tabular cards a concise synopsis of preventive measures against communicable diseases. The different forms of barrier which a knowledge of sanitation enables us to interpose between the sick and the healthy are conveniently shown in columns printed in different coloured ink from that used for the rest of the chart. The charts, in a less complete form, have had an extensive trial at the School of Army Sanitation in Leeds, and we have no doubt that in their revised and extended form they will be distinctly useful for teaching purposes. Public health officers will find them convenient for reference purposes in emergency outbreaks. Perhaps the charts will be most appreciated by members of the Navy, Army, and Indian Medical Services, whose regular lot it is to deal with communicable diseases in tropical climates. The usefulness of the charts is increased by the introduction of information as regards incubation, period of infectivity, and quarantine.

THE CHILD'S PATH TO FREEDOM.

By NORMAN MAC MUNN, B.A. Oxon. London: G. Bell and Sons. 1921. Pp. 163. 2*s.* 6*d.*

THE idea of absolute freedom for the child, in order that he may work out his own salvation, is no new doctrine in these days, but its exponents are even now few in number compared with orthodox teachers, and are possibly still more disproportionately inarticulate. Mr. Mac Munn published in 1914 a volume called "A Path to Freedom in the School," and this has now been revised and largely rewritten under a slightly different title. The book is an able and luminous statement of the position taken by the educational reformers, and being written with real psychological insight and skill, backed by practical experience, carries much conviction to the mind of the unbiased reader. The book is designed to show that the present system of "class-teaching by adults" is incompatible with the modern view of the intuitively purposive nature of a child's play, but its teaching is really much more constructive than this. Mr. Mac Munn points out that "there is no analogy whatever between the effects of partial and of complete freedom," and while many even of the more advanced teachers would hesitate to go the whole way with him, nothing short of this would give his system a fair trial. It is at any rate certain that schools run on the lines pictured by Mr. Mac Munn would produce boys and girls of an entirely different stamp from the product of ordinary schools.

Theories as to discipline, ways of teaching and of learning, and cognate subjects are expounded in detail, criticisms and objections being squarely faced. Mr. Mac Munn pleads for a revolutionary change in our educational policy, and since his suggestions are not unpractical, the book is one that no serious student of education can afford to ignore.

THE YEASTS.

By ALEXANDRE GUILLIERMOND, D.Sc. Translated, in collaboration with the Author, by F. W. FARMER, Ph.D. London: Chapman and Hall.: New York: John Wiley and Sons. 1920. Pp. 424. 33*s.*

IT will be generally agreed that no class of micro-organism has been more intimately associated with the progress and development of the human race than the yeasts. Microscopic examinations have revealed the presence of yeast cells in bread found with Egyptian mummies, and from the earliest times of which there is any record beverages fermented with yeast were consumed. To-day the yeasts are of increasing interest and they are assuming greater importance in medicine, especially in relation to certain deficiency diseases. From the technical standpoint the compressed yeast industry in this country and America is singularly well organised both as regards manufacture and distribution. The literature on yeast is to be found scattered in a number of scientific and technical journals and in treatises dealing with certain industries, but so far as we are aware Dr. Guilliermond is the first author to collect the various data relative to yeasts in one volume and to arrange it in a manner available to biologists, practitioners in industrial work, agriculturists, and physicians. The subject-matter of his book is dealt with under the following heads: Morphology and development of the yeasts; Cytology of yeast; Physiology, Nutrition, Respiration, and Alcoholic fermentation; Origin of the yeasts; Methods of culture isolation, characterisation, and identification of yeasts; Variation of yeasts; Classification of yeasts; Fungi related to the yeasts.

While this edition is claimed to be more than a translation of the author's original "Les Levures" published in 1912, certain of the chapters enumerated are disappointing. The information is not always up to date, and there is no critical summary of our present knowledge of some of the subjects discussed. The wording is often careless and not always lucid, and there are also a number of errors, particularly in the spelling of authors' names; moreover, the chemistry is sometimes shaky—for example, hydrocarbon is used where carbohydrates are intended. In spite of these annoying blemishes the book is a really useful one; it is well illustrated and printed, and there is a good bibliographical index.

JOURNALS.

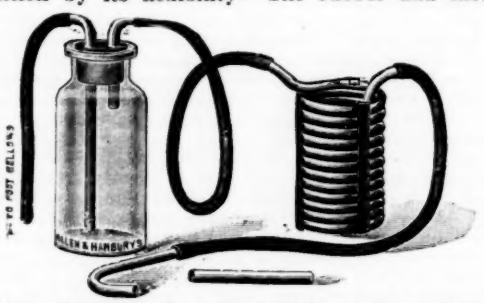
Journal of Laryngology and Otology. May and June, 1921. Vol. XXXVI., Nos. 5 and 6.—In the May number Miss Gladys Boyd reports on 188 consecutive cases of the Schwartze operation from the Edinburgh Royal Infirmary. Three further cases were found at operation to be furunculosis. Of the 188 cases, 112 were patients under 21 years of age; 6 cases arose after operations on the nose or pharynx; conservative treatment, including paracentesis, had been tried and had failed in 17 cases; in 8 cases death resulted, and was due to intracranial complication. The paper contains numerous interesting details. There is an abstruse article by Prof. R. Bárány, of Upsala, on the diagnosis of disease of the otolith apparatus; Mr. Herbert Tilley reports three cases in which diphtheria carriers were cured by enucleation of the tonsils, and Dr. Logan Turner describes two cases of successful operation on adhesion of the soft palate to the pharynx by Tilley's method of fixing temporary ligatures from the separated palate to the incisor teeth.——The June number opens with a sane but discursive article on some discarded theories and methods by Dr. P. McBride, which is followed by two papers on injuries to the ear in warfare by Mr. Jefferson Faulder and Mr. Lionel Colledge. Finally, Dr. Dan McKenzie reviews an undulatory theory of olfaction put forward by M. A. Heyninx. The reports of societies' proceedings are still more than a year behind.

In the *Journal of the Royal Army Medical Corps* for June, Lieut.-Colonel W. F. Tyndale, C.M.G., discusses medical staff work of an army in war-time, showing the great responsibilites of a Director of Medical Services and his staff, which must be small but very hard-working. "Keep the officer staff small, work the officers hard, but get them their leave regularly." The A.D.M.S. of his division worked regularly 9½ hours daily for seven days a week. His advice on choosing officers for the staff will be carefully read and remembered by all junior officers who can profit by them. He prefers officers with higher qualifications. "Of all the tests of the good and bad points in an officer give me a hasty retreat as the best," shows how different are the problems of a civil practitioner and an army medical officer.—Captain William Wallace, writing on the vision of the soldier, notes that in the pre-war British Army the standard of vision was high and invariable, and that "the amazing shooting of the original Expeditionary Force, and the endurance of that heroic first (and only) line are triumphant testimony to the soundness of the War Office policy of selection, organisation, and training." He tells how the standards of vision were altered in the war, observing that, before the war, the examiner had to take care that no man with poor vision slipped into the army, but with the coming of conscription the difficulty was to ensure that a man did not succeed in simulating defective sight, and so unfairly escape service. On the other hand, when visual standards are lowered, men may join the service with serious ocular defects and consequent unjustifiable claims to pension which will be hard to resist. This paper should be read by all members of medical pension boards and inspectors of recruits.—Miss Margaret W. Jepps reports the treatment of amœbic dysentery cases in the University War Hospital, Southampton, during 1918–19. The recommended treatment is—At night: chlorodyne, ℥10; half an hour later emetine bismuthous iodide, 3 gr. in emulsion in liquid paraffin, ℥ss., repeated nightly for 12 days. Of 63 cases so treated, only 13 per cent. relapsed. When this failed, emetine hydrochloride, 1 gr. hypodermically daily for 12 days, cured three out of five patients treated.—Major N. V. Lothian and Captain A. R. Ward, of the Royal Army Medical School of Hygiene, Blackpool, give a detailed account of the "Activated Sludge" method of sewage disposal proposed by Mr. Haworth of Sheffield. They consider it worthy of widespread adoption, being effective, and economical in installation and maintenance. Sewage sludge when it has "ripened," contains rotifera and infusoria, which establish themselves at the expense of pathogenic micro-organisms; there are also nitrifying bacteria. Mixed with fresh sewage in proper proportions and kept stirred up by paddles, in eight hours the aerated sludge secures a purifying effect that is all that is wanted. The effluent is fit for discharge; total organisms are very greatly reduced; there is entire absence of nuisance; and no chance is given for flies to breed.—Major L. Avery, D.S.O., R.A.M.C., T.F., proposes changes that seem needed from the point of view of a medical officer who served with mounted troops in the nearer East throughout the war. He would like to see the regimental stretcher-bearers drawn not from the regiment but from the trained R.A.M.C. personnel of field ambulances increased in establishment accordingly; he proposes a lighter stretcher, in two parts so that it may be packed on a pack-saddle, and a better medical cart, and asks that all needles of syringes shall have standardised nozzles, whether for 10 c.cm. or 1 c.cm. syringes.—Captain J. S. K. Boyd, with others, has tried to find benefit from vaccine therapy in acute gonorrhœa, but whether he gave in four weeks 600 millions or 2450 millions of gonococci he could see no clinical advantage, and indeed the cases that got vaccine remained longer in hospital and did not suffer less from complications. Under current literature is a quotation from the Scandinavian *Arch. f. Physiol.*, in which Töttermann states that in roughly alternate weeks of teetotalism and moderate drinking he could thread more needles in 20 minutes during the teetotal periods. Fatigue seems to have come on in those weeks less quickly.

New Inventions.

OPEN-ETHER ANÆSTHESIA DURING THROAT OPERATIONS.

THIS is an apparatus for maintaining anæsthesia by the administration of open ether during operations on the throat. As will be seen by the illustration, it consists of a Woulff's bottle and a coil of malleable metal (12 circles, each 9 inches in circumference), which is placed in a vessel containing hot water, whereby ether vapour becomes heated. A foot-bellows is used for sending air through the ether contained in the apparatus. The warmed ether vapour continues through the rubber tubing to a flexible metal tube, 6 inches long, which is placed in the mouth and is easily adjusted to the required position by its flexibility. The rubber and metal



tubing, all having the same sized bore of a quarter of an inch, enables an ample amount of the warm ether vapour to enter the mouth and so maintain a perfect anæsthesia, which has been previously induced by the open-ether method. The use of the foot-bellows leaves both the anæsthetist's hands free. Oxygen can also be passed through the ether instead of air from the bellows. This apparatus has been used by me for the operation of enucleation of tonsils by dissection in a vast number of cases during the last 2½ years. The makers are Messrs. Allen and Hanburys, Wigmore-street, London, W.

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THE LANCET.

LONDON: SATURDAY, JULY 2, 1921.

The X Rays in Malignant Disease.

DURING the past week there have been articles in the lay press inspired from the West London Hospital and based upon a striking demonstration of a new method of using the X rays for the treatment of malignant disease. We may remind our readers that a description of some of the most important details of this, the Erlangen, method were given in THE LANCET of Jan. 1st last, in a report of the proceedings of the Section of Electro-therapeutics of the Royal Society of Medicine. Since that time medical men have been investigating the method as far as circumstances have permitted. As in all similar methods of treatment, the basic principle involved is that radiations of the gamma type—whether from radium or an X ray tube—have at first a stimulating and, as the dose is increased, a destructive effect upon living cells; and it is found that cells of the embryonic type are more susceptible to these rays than normal tissue elements. It thus follows that a malignant cell invading normal structures may be destroyed without serious damage to the latter. It is necessary to keep these facts in mind while testing the claims put forward from Erlangen, a place very favourably situated for the elaboration of X ray technique. The method in its present form is the outcome of an enormous amount of work patiently carried on for years under skilful guidance.

Briefly stated, the position now is that a highly efficient type of radiation has been attained, one that can be standardised within narrow limits and reproduced at will for as long as is required for practical purposes. The necessary dose to destroy a malignant cell has been ascertained, and a way evolved for giving this dose to any required depth; and it has been proved beyond doubt that if every part of a localised malignant growth receives this dose, that growth will almost certainly disappear. If it does not do so the reason is most likely to be faulty technique; it may be due to extension of mischief beyond the apparent field of involvement, or because the health of the patient is without recuperative power. This last point is one that does not always receive the consideration it demands. As a matter of fact, it is useless to expect any appreciable degree of success in patients whose health is more or less seriously impaired, and whose blood count is not approximately normal. Efficient irradiation produces marked blood changes, notably a sharp fall in the red corpuscles, requiring from six to eight weeks of generous feeding to restore, and until this is accomplished it is inadvisable to give the second or third irradiations required in certain cases. All these facts have been arrived at after minute investigation based on thousands of applications, where careful records have been made of the effects produced. The records are in keeping with theoretical considerations, supporting belief in their substantial accuracy. There is another point to be remembered: it has been found that if a carcinoma cell receives a dose of X rays rather less than half the full cancer dose the effect is one of powerful stimulation, resulting in appreciable increase in size of the growth, with possibly fatal results. This is one reason why the full dose is given at one sitting.

We may now consider the routine adopted at the Frauenklinik in Erlangen for all cases of malignant disease. Immediately the nature of the case is clear the patient is sent to the X ray department for appropriate treatment, primary surgical operation being definitely abandoned, save in the single case of primary carcinoma of the ovary, where the tumour is at least as large as a hen's egg. Here the mass of the tumour makes full irradiation of the area difficult, and it has been found best to remove it and irradiate more or less immediately afterwards. Cases of uterine carcinoma treated by this method have shown over 80 per cent. "clinically cured" after 3½ years, and the results in other regions are reported as equally favourable. Among medical men in this country such statements are received with doubt, but while such caution is commendable, we would venture to remind our readers that we are here concerned with a technique which is radically different from anything usually practised in this country, and that with our less perfect methods radiologists have never had a chance to show the possibilities of the X rays in the treatment of cancer. Surgical operation is the accepted routine, and the X rays are not used until afterwards, either as a prophylactic or when recurrence and extension have made further operation inadvisable. This practice has been the correct one in the light of our knowledge and experience, and no praise could be too extravagant for the skill and patience of our surgeons in their efforts to deal with appallingly difficult problems. If many cases of malignant disease can be shown to do better under radiological than surgical methods, not a few surgeons will hand them over to the radiologist with a feeling of intense relief. In spite of all the work and skill expended the results of the treatment of malignant disease by operation are not brilliant, and it looks as if superior results are being attained by the methods elaborated by Professor WINTZ at Erlangen. If comparable results are to be aimed at in our clinics, the cases must go to the radiologist before any operation is done. After long and careful observation it is the considered opinion of the gynæcologists at Erlangen that surgical operation definitely increases the danger of metastasis.

It will be seen that the suggestions in the lay press, that cases of malignant disease should go to the radiologist immediately the diagnosis is made and before operation, are based on the practical experience of competent observers. There is little doubt that the time has come for us to reconsider our position in dealing with the situation. Assuming the claims for the irradiation of malignant cases to be substantiated, the advantages to be gained will be readily appreciated. Apart from the higher percentage of apparent cures, cases would come under observation at an earlier stage; the dread of the major operation causes many to hide their trouble until the chance of more or less permanent relief has definitely passed.

The Bacteriology of the Alimentary Canal.

IN two years' time pious microscopists will commemorate the bicentenary of the death of ANTHONY VAN LEEUWENHOEK, whose portrait has been adopted by the American bacteriologists as their sigillum. That great and good Dutchman is commonly supposed to have been the first to perceive clearly the forms

and shapes of bacteria, to appreciate that they were alive, and to imagine that they were of importance. Claims of priority are always upset sooner or later by diligent students of the past, for discovery is a process and not an event, but whether LEEUWENHOEK really did make the first microscopes through which bacteria could be plainly seen or not, he will always be remembered for having pointed out so clearly the abundance of microscopic life in the mouth. Like STEPHEN HALES and the other great pioneers, he recognised also the necessity of quantitative information, and hazarded the approximation that there were as many bacteria in one hollow tooth as there were men in Holland. The mouth, indeed, contains an embarrassing assemblage of micro-organisms, many of them in enormous numbers. Certain streptococci, for example, are so numerous that they have been used by M. H. GORDON in his ingenious researches as a test for the range of the droplets of saliva ejected by our representatives in the House of Commons during their orations. More than a hundred different varieties of bacteria have been found in the mouth, and it is still very uncertain what most of them do. Some are certainly capable of pathogenic activity; the pneumococcus is often present, and the demonstration by PASTEUR and STERNBERG that mice could be killed by the injection of normal saliva is one of the landmarks in the history of bacteriology. Streptococci get into decayed teeth and cause root abscesses, from which they may spread to the joints or heart valves. Whether any of the spirochætes or amœbæ or the *Bacillus fusiformis* are primarily pathogenic is not altogether clear; they are much more abundant in and about various inflammatory affections than under normal conditions, but it is at present impossible to be sure which is cause and which is effect. Perhaps pyorrhœa is like grouse disease, which, with no specific cause, is the cumulative result of an abnormal excess of a variety of parasites working in an alimentary canal depressed by bad hygienic conditions.

Such of the mouth flora as is carried on with the food disappears in the stomach. Under normal conditions the acidity of the gastric juice definitely stops multiplication, and seems actually to kill the great majority. In dilated and other diseased stomachs there is pretty free growth, but here again the flora of yeasts, Boas-Oppler bacilli, and so on, is a special one, and not a diluted replica of that in the mouth. The duodenum is normally sterile, except when food is passing along, and even then there are quite few organisms. As scrutiny goes further down the bowel the organisms progressively increase, so that in the ileum there are many streptococci and *B. coli*, the relative proportions of the two depending rather on the nature of the food; worms, too, produce a striking local increase of bacteria, which in the upper part of the small bowel are mostly or entirely streptococci. In the large intestine, with its greater lumen, relatively stagnant contents, and alkaline reaction, yet another habitat is found with its own special flora. *B. coli* in its different kinds becomes enormously abundant, and various streptococci, spirochætes, and sometimes amœbæ flourish. Here, too, is the great breeding-ground of the sporing anaerobes; the technical difficulties of their cultivation and separation shielded them from the prying curiosity of bacteriologists pretty thoroughly until it was realised that they included some which, like *B. welchii*, might on occasion be of the most urgent pathogenic importance. The residue of this vast bacterial population constitutes about a quarter of the weight of normal fæces. It is reckoned, by methods more precise than those of LEEUWENHOEK, that an average motion contains many more bacteria than there are men, women, and children in the whole world. Most of them are dead; those still living are principally *B. coli*.

We have, then, in the alimentary canal a series of areas which differ in their physical and chemical circumstances, and in their inhabitants in the same sort of way as a beech wood on chalk differs from an oak wood on clay. Differences in the amount of available oxygen, in the host's food as it is digested and absorbed, in the secretions and excretions of the intestine, in the activities of the bacteria themselves, all contribute to produce a series of habitats, each with its characteristic flora; their study is evidently part of what botanists call œcology. What is of particular interest in the present case is that the different floras have all been demonstrably sorted out from the same original material coming in through the mouth; their establishment is effected in a few months. It follows, too, that the examination of the bacteria of the fæces tells us, more or less, what organisms there are in the stools, and nothing else; if we want to know what is going on in the small intestine we might as well investigate the mouth. Of the utility of these organisms we know even less. Looked at from our own point of view, it is certain that life of at least a tolerably normal sort is possible without them, though this, of course, affords very slight grounds for an opinion that we derive no benefit from them under ordinary conditions. They definitely enable ruminants to get energy out of cellulose, they may synthesise vitamins, and their products, no doubt, help a bowel to act naturally when it has grown up to be accustomed to them. Contrariwise, it is by no means certain that sterility of the intestine would abolish the many ills, from hypertension onwards, that have been all too glibly assigned to the activities of the organisms there. We have to look at the matter from the point of view of the organisms, for whom the alimentary canal provides a series of congenial homes in which they can achieve ideals which are not proved to be entirely mischievous in design.

Operative Treatment of Prolapse of the Uterus.

PROLAPSE of the uterus is undoubtedly the cause of a great deal of discomfort to many women, and of profound suffering to women of the working classes, and the treatment of this condition and the performance of operations for its relief take up a large amount of the time of the practising gynæcologist. A great deal has been written upon its exact cause and there is even yet a good deal of disagreement as to the precise nature of the supports of the uterus and the particular rôle they respectively play in maintaining this organ at its normal level. It is becoming more and more common to practise some form of operative cure for the condition, and the radical cure of a prolapse is nowadays as common an operation as the radical cure of a hernia. It is natural, therefore, that a large number of operations differing but little in detail should have been devised for this condition. But their number and complexity prove that the results are not always such as might be desired. The radical cure of a case of "falling of the womb" is not a difficult attainment, no matter what operation is performed, in a woman past the child-bearing period of life; but a procedure which will stand the test of subsequent child-birth is

much more difficult to devise. The problem is complicated by the ready distensibility of the vagina and pelvic floor and the extreme degree of stretching which these structures have to undergo during the passage of a fœtus. For these reasons many operators in the past attempted, as some even at the present time attempt, to reinforce the plastic procedures carried out on the vagina by some method of fixation of the uterus, so as to overcome the wedge-like action of that organ and its tendency to stretch again and to descend through the vaginal passage. Any operation, however, which fixes the uterus contravenes the normal anatomy and physiology of the part, and converts what should be a readily mobile organ into a fixed one. Further than this, whether the fixation be carried out by the vagina or by the abdomen, it complicates and increases the immediate and remote dangers of the operation. For these reasons many gynæcologists content themselves with operations performed by the vaginal route alone and do not advocate any method of fixing the uterus, whether by the vagina or the abdomen.

At the recent British Congress of Obstetrics and Gynæcology held at Birmingham this matter was very fully discussed, when papers were read by a number of gynæcologists advocating vaginal operations only, reasoning that, as these procedures gave permanent results which did not prevent pregnancy and would stand the test of parturition, abdominal interference was unnecessary and therefore undesirable. Most of the speakers who took part in the discussion endorsed this view of the matter. It has been objected to the operation of ventrofixation, when employed as a means of supporting the uterus in cases of prolapse, that it not only increases the risk of the operation by necessitating the opening of the abdomen, but that it may give rise to serious interference with the course of parturition in the event of pregnancy ensuing, and that it leads to a very considerable risk of subsequent intestinal obstruction when practised in the ordinary manner. No doubt this is true of at any rate some of the methods of carrying out this procedure. It is, however, possible, as the paper published in THE LANCET of June 18th by Dr. J. E. GEMMELL and Mr. A. L. ROBINSON shows, to carry out this operation in such a manner as to cause no undue risk, to entail no interference with subsequent pregnancy and labour and, in a large majority of the cases, permanently to cure the patients of the symptoms for which the operation is undertaken. They practise a procedure in which the utero-vesical pouch is obliterated, and so, by preventing the formation of adventitious bands or peritoneal fossæ, they eliminate the possibility of post-operative strangulation of the bowel. They further point out that such an operation lessens the extent of the plastic operations on the vagina and renders them less severe. This method no doubt largely eliminates the risk of intestinal obstruction, but the fact that an abdominal section has to be performed still remains. Some of those who took part in the discussion pointed out that no one operation could be expected to give equally good results in all cases and that a careful selection of cases and of operations specially suited to the conditions present was more likely to give good results than a blind adherence to any one particular method. This is sound sense.

The discussion served to show that a great many gynæcologists are content to practise only plastic operations on the vagina in cases of prolapse and that when properly carried out these operations give a very high percentage of cures. Any operation which is performed for the cure of this condition is the best which tends to reproduce as far as possible the original anatomical condition of the parts, and for this reason plastic operations on the vagina as a whole will always be more anatomically correct than any form of uterine fixation. It would seem that whenever possible in women still of child-bearing age plastic operations on the vagina alone should be performed, and that forms of ventrofixation should only be carried out, if at all, in women past the menopause and in cases of very severe procidentia.

THE EXISTING INSTITUTE OF STATE MEDICINE.

A COPY of a memorandum sent on behalf of the Council of the Royal Institute of Public Health by its President, Lord Leverhulme, to the Minister of Health has reached us. The memorandum is in the form of a report from the Executive and Finance Committee, signed by its chairman, Surgeon Rear-Admiral Sir P. W. Bassett-Smith, which was adopted by the Council on June 23rd. Its main feature is a protest against the omission in the recently published report of the Post-Graduate Medical Committee, abstracted in our columns last week, of any allusion to the Royal Institute of Public Health. The memorandum includes a historical summary of the activities of this body, resulting in the statutory recognition of Diplomas in Public Health in 1886, in their adoption as necessary qualifications for medical officers of health in 1888 and 1889, and in the recognition by the General Medical Council of a special curriculum of post-graduate study for these diplomas. In 1905 the Council, recognising the inadequacy for post-graduate purposes of the training in public health offered by the undergraduate schools, and the desirability of centralising post-graduate training in one institution, proceeded to found and equip laboratories and to arrange courses of instruction. These courses have since been recognised by every medical examining board in the United Kingdom as qualifying for admission to examination for the D.P.H. The Institute has been recognised by the University of London as a public educational institution and its course for the degree of M.D. in State Medicine is approved by the University. The Council adds evidence that the Institute has had under consideration for some time proposals for developments on the lines now suggested by the Post-Graduate Medical Committee, to which no representative of the Institute was summoned to give evidence. The memorandum ends with a request that the Minister of Health should consider the desirability of building up an Institute of State Medicine on the foundations already laid by the Royal Institute of Public Health rather than the creation of a new Institute.

THE adjourned discussion on "The Problem of the Private Clinic System in Great Britain," will be held at the Royal Society of Medicine, on Monday, July 4th, at 8.30 P.M., the President, Sir John Bland-Sutton, in the chair. If thought desirable the following resolution will be moved:—

"That in the opinion of this meeting the time is ripe for the formation of Group Clinics in this country, and that sympathetic encouragement should be given to them by the profession and by its governing bodies."

Annotations.

"Ne quid nimis."

PROFESSIONAL IMMORALITY ON THE STAGE.[1]

THOUGH the presence of a medical practitioner is often invoked in comedy, a play devoted entirely to medical questions and written by a medical man is certainly a rare occurrence. The stage hardly seems the place for an essay on medical deontology, though "The Right to Strike" was in substance such an essay. Dr. Rothschild's work, however, is a live drama, and as performed on the semi-classic boards of the Gymnase last week justified its appearance at the theatre which, in French literature and histrionic art, comes next after the Théatre Français and the Odéon. Baron Henri de Rothschild left the world of finance to become first a doctor in medicine, then a philanthropist, and many model dwellings for artisans are due to his generosity and much public encouragement in works of sanitary reform. And now he has achieved a large measure of success as a dramatic author under the pseudonym of André Pascal. Some of André Pascal's plays have already been presented in London, Monte Carlo, Brussels, as well as in Paris.

"The Caduceus" has had a difficult birth. When read to the company at the Odéon the players were scared by the subject, no less than by the vivacity and frankness in the telling of ugly truths. In the middle of the controversy we had the war; and, after the war, it became necessary to alter those portions of the play satirising the frivolity of society ladies, for, during the war, they had surprised the world by their devotion. This is shown in the revised version now given at the Gymnase. The story tells how an unscrupulous medical practitioner, without means or scientific success, but with the genius of self-advertisement, raises himself to social eminence and wealth in an incredibly short time, being financially backed by usurers and dealers in furniture and bric-a-brac. This person, Dr. Revard, at the opening of the play is instructing his secretary to write to a practitioner as follows: "Answer that I want a fee of 6000 francs for myself, and that, as this is the first affair, I will give him a commission of 50 per cent.; but for other affairs which he may bring me I will, in future, give him 20—no—say 30 per cent. He is an intelligent fellow and should be encouraged." The secretary then prepares to leave the room, but is called back to make sure this answer will be sent by telephone and not committed to paper. Thereupon a discussion arises, for Dr. Durieux, an old fellow student who overhears the dictating, is shocked at the paying of commissions out of medical fees. Dr. Revard agrees; first and foremost, he answers, it is well understood that there is to be no dividing, and no commissions to intermediaries. We are only entitled to ask a fee that will enable us to pay our assistants, he allows. But, in practice? The client rarely bargains over the sum the operator requires; on the other hand, eight times out of ten he refuses to remunerate the medical attendant, though the latter has the heavy responsibility of recommending an operation and of selecting the operator. The client generally thinks he has paid quite sufficient for the operation without bothering about accessories, therefore, says the specious Dr. Revard, certain surgeons are glad to assist beginners. Such, in brief, is Dr. Revard's professed code; in fact, he thrives on commissions, and, through four acts, the dishonourable methods by which his success is obtained are exposed till they lead up to the final and dramatic catastrophe.

[1] Le Caducée, pièce en quatres actes, par André Pascal (Dr. Henri de Rothschild).

One of the advertising dodges is the operation performed before the kinematographer for fashionable ladies and sensation-hunting reporters. Then comes the passage which the experience of the war caused to be altered. The old and highly honourable Prof. Godfroy thus protests:—

"Come, my friends, let us agree for once. Before the war the public wanted new performances, something more sensational, and certain practitioners did not hesitate to admit to the tragic sanctuary of surgery fashionable society women in search of some diversion."

The Marchioness: "That was odious!"

Prof. Godfroy: "Then the world tragedy burst upon us. Women now knock at the door of our hospitals, impelled not by morbid curiosity but by the sentiment of duty! I render homage to their admirable devotion.

Prof. Godfroy, when consulted by a wealthy, dissipated American lady, Mrs. Watson, tells her quite plainly that there is nothing really the matter with her, but she had better go to bed earlier and take a cold bath in the morning. Dr. Revard, on the other hand, delights this same lady by making love to her and prescribing pink and perfumed baths. The need of money, however, leads him to perform a bogus operation upon her, and he kills his patient. After this catastrophe Prof. Godfroy again appears, this time as the Nemesis of the play, and denounces Dr. Revard in these energetic words:—

"Yes, there is no higher title, no title more sacred than that of Doctor of Medicine. But that title must preserve its prestige. There must not be among those who bear it any elements of corruption. We must not permit certain individuals to become, among our young men who are so wholesome and generous, elements of corruption. Thus if among us there should be a black sheep it is our duty—the older ones—to sacrifice it. That is why I have come here. Madame Watson was not your first victim, but I swear to you that she shall be your last."

Dr. Revard ends with an effort to redeem his reputation. He commits suicide, but in such a manner as to demonstrate the action of a toxin which his friend Dr. Durieux hopes may provide the means of checking septic poisoning. There is no doubt that the play is thrilling, and points a good moral. But we should be sorry to think that the medical profession requires such an obvious lesson. The play is published in a special supplement of *L'Illustration*.

THE PHYSICS AND CHEMISTRY OF COLLOIDS.

A BOOK, written in German, on the preparation of colloids by Prof. Svedberg appeared in 1909. Recently he has published an interesting short monograph[1] dealing with the nature of the processes leading to their formation, in which a most difficult subject is made unusually clear. Colloids or disperse systems may be formed in two ways, by condensation or by dispersion. In the former method, matter is brought together within a smaller boundary surface than before; in the latter, the matter is dispersed so that the specific surface is increased. In some cases the processes of condensation and dispersion may be combined. Superficially the electric arc method of producing colloidal solutions of metals is one of dispersion, but in reality it belongs to the second group, since it consists in the vaporisation of the metal and its subsequent condensation. It is thus essential to know the state of the system immediately before the formation of the disperse phase. There are only a few cases of dispersion, such as emulsification of fats and hydrocarbons, occurring in the homogenisation of milk, and the grinding of material to minute particles. Most processes leading to the formation of colloids are those of condensation. The simplest is condensation in vacuo, as exemplified by the dark layer on old incandescent electric lamps; the metal has been vaporised and condenses as a

[1] Monographs on the Physics and Chemistry of Colloids. The Formation of Colloids. By Theo. Svedberg, Professor of Physical Chemistry in the University of Upsala. With 22 illustrations. London: J. and A. Churchill. 1921. Pp. 127. 7s. 6d.

film of particles on the glass. Similar deposits can be made in a neutral gas and the gas may be exchanged for a liquid, as in the case of the submerged arc where the liquid around the arc is converted to gas. The production of disperse systems in liquids and solids usually involves a chemical reaction such as reduction, oxidation, or double decomposition. Here again we can have as alternatives volume condensation and surface condensation. Photograph reactions are generally volume condensations; surface condensation takes place between two reacting solutions at their surface only. Prof. Svedberg deals with the various experimental details which have been used to elucidate the processes. Many of these, for instance, the formation of spray, smoke, and volcanic dust, are of great practical importance.

THE DIAGNOSIS OF FOREIGN BODIES IN THE AIR- AND FOOD-PASSAGES.

IT is within the experience of every laryngologist that foreign bodies may pass through the larynx with the production of the most trifling symptoms which may readily be overlooked in children, and even in adults. Foreign bodies, especially if of a non-absorbent character, may remain even in the lung for a long time without producing symptoms, and Dr. C. H. Carroll's interesting case recorded in THE LANCET of June 18th shows how the practitioner must not be put off his guard by the absence of history of swallowing anything unusual. Sooner or later, however, symptoms arise, but the circumstances which might suggest the aspiration of a foreign body have by that time been forgotten by the patient, and many cases have been treated for such affections as chronic bronchitis, bronchiectasis, or pulmonary tuberculosis for prolonged periods in some of whom the correct diagnosis has only been disclosed by post-mortem examination. A correct knowledge of the symptomatology of foreign bodies in these regions is obviously, therefore, of the highest importance, but the relative rarity of the cases in the experience of any one observer has made systematic study a matter of great difficulty. Dr. Chevalier Jackson has recently published such a study based on 789 cases from the Bronchoscopic Clinic of the Jefferson Medical College of Philadelphia.[1] He lays stress on the diagnostic value of a history of initial laryngeal spasm, but states that a foreign body may pass right through the larynx into a bronchus without producing any laryngeal disturbance. If sudden death does not occur, the initial spasm passes, and a certain degree of toleration is established; but foreign bodies do not often remain latent in the larynx for any considerable time, for reactionary swelling usually produces enough dyspnœa to call for examination. In the trachea foreign bodies are usually movable, and their movements can be felt by the patient, while the vibrations may be palpated or heard with the stethoscope. Cough is apt to be paroxysmal and very severe, and a sudden shutting off of the expiratory blast and of phonation during paroxysmal cough is almost pathognomonic of a movable tracheal foreign body; there is usually dyspnœa due partly to the bulk of the foreign body and partly to traumatic subglottic œdema. Jackson describes an "asthmatoid wheeze," heard at the open mouth, not at the chest wall, in cases of tracheal and bronchial foreign body; in the former it is usually louder and lower in pitch. Pain is uncommon, but may occur and be accurately localised by the patient.

It is in the bronchi that foreign bodies are most likely to remain latent for long periods. There is often a protracted, delusive, symptomless interval, and the time of inhalation may be unknown or forgotten. Cough and purulent expectoration ultimately result; periodic attacks of fever, with chills and sweats, and followed by increased coughing and the expulsion of a large amount of purulent, more or less foul material are so nearly diagnostic of foreign body as to call for exclusion of this probability with the utmost care. All the symptoms of tuberculosis, emaciation, clubbing of the fingers and toes, night-sweats, and hæmoptysis are in most cases simulated with exactitude, even to the gain in weight by an outdoor regimen. But tubercle bacilli have never been found at the clinic in association with bronchial foreign bodies, which therefore do not cause, but only imitate, pulmonary tuberculosis. The distinctive taste of metallic or organic bodies may be noticeable to the patient, and offensive sputum should always suggest a foreign body. Sudden complete obstruction of one main bronchus does not cause noticeable dyspnœa, provided that its fellow is functioning; but complete obstruction of a bronchus is followed by rapid onset of symptoms. The physical signs usually show limitation of expansion on the affected side, impairment of percussion, and lessened transmission of breath sounds: signs which may lead to an erroneous diagnosis of empyema. In cases of non-opaque foreign body, radiographic examination is still of great value; the signs are those of an acute unilateral obstructive emphysema, and include increased transparency on the obstructed side, displacement of the heart to the uninvaded side, and downward displacement of the diaphragm with marked limitation of its movements on the obstructed side. Organic foreign bodies, such as nut-kernels, and especially pea-nuts, cause a severe general toxæmia and local reaction, which is more marked in young children and may be fatal within 24 hours; to this affection Jackson has given the name "arachidic bronchitis." He strongly advises that all cases of chronic chest disease should have the benefit of a radiographic study to exclude bronchial foreign body, that negative opinions should never be based on any but the best plates, and that even then there will occasionally be need for diagnostic bronchoscopy. In the œsophagus, foreign bodies are more easily diagnosed; lateral and antero-posterior radiographic plates should be taken, and, when the body is not "radiopaque," screen examination of the deglutition of a barium mixture, or barium capsule, is of great value.

We would recommend the study of this careful and thorough monograph, not only to laryngologists, but, and more especially, to general physicians and practitioners; for if, in obscure cases of pulmonary disease, the possibility of foreign body is regularly borne in mind, the errors of diagnosis described by Dr. Chevalier Jackson will less frequently occur.

[1] American Journal of the Medical Sciences, May, 1921, p. 625.

TRANSMISSION OF THE ENCEPHALITIS LETHARGICA VIRUS.

IN a recent communication,[1] Levaditi, Harvier, and Nicolau demonstrated that the virus of encephalitis lethargica is transmissible from the mother to the fœtus, in the case of rabbits. A pregnant rabbit was inoculated with the virus and died 11 days later. The brain showed characteristic histological changes, while the brain of the fœtus examined appeared normal, but a portion of the latter injected into a healthy rabbit produced a typical encephalitic infection. The above observation confirms the view that the virus of encephalitis lethargica can be present without producing any gross histological change, as McIntosh and Turnbull found in the Derby epidemic. In addition it proves that the virus can pass through the placenta and infect the fœtus, thus lending considerable support to the idea that in a certain number of these cases of encephalitis in young infants the infection is congenital in origin. The work may thus have a bearing on the treatment of cases of pregnant women suffering from encephalitis lethargica. When the infants are

[1] C. Levaditi, P. Harvier, and S. Nicolau: Compt. rend. Soc. de Biol., 1921, lxxxiv., 957.

born alive and subsequently develop symptoms of the disease, infection from the maternal nasal secretions or through the milk cannot always be excluded, but the experimental findings of MM. Levaditi, Harvier, and Nicolau suggest that transmission in utero is at least a possibility.

INDUSTRIAL DERMATITIS.

SKIN eruptions among industrial workers are of frequent occurrence and come under the observation of busy practitioners almost daily. The extent to which they prevail may be judged from an estimate made in one industry only that approximately 25 per cent. of all machinists exposed to oils are or have been affected with dermatitis.[1] The inclusion of dermatitis and ulceration of the skin produced by dust or liquids in the schedule of diseases for which compensation must be paid under the Workmen's Compensation Act, 1906, gives a further and legal significance to this group of affections. Hence, the publication in America of three important papers based on considerable research into the causation of skin affections among workers exposed to oils cannot fail to be of interest. The conclusions arrived at by the different workers are not dissimilar.

The subject has previously received attention from our own medical inspectors of factories and one of their investigations (the importance of which seems to have escaped the attention of the American investigators) throws particular light upon the whole matter, because the peccant material—pure olive oil—was unadulterated by anything else.[2] The observer, Dr. E. L. Collis, concluded that the trouble was caused by the oil dissolving the natural fats, palmitin and stearin, from the skin which then becomes dry; cracks follow through which microbic invasion occurs, setting up dermatitis. Here is presented the first simple stage in the process. McConnell, in reporting upon an investigation among printers,[3] after placing on one side all possible influences such as health, physique, family history, or exposure to infection, remarks that "one significant fact was very prominent: all persons suffering with dermatosis were found to have dry skin—that is, skin either partially or wholly devoid of natural oiliness; whereas those persons without eruptions have oily skin. This dryness of the skin is the only differentiating factor found to exist with any degree of constancy among the men so affected."

When the oil, as in the case of cutting oil in engineering shops, is mixed with fine metal chips, these chips by causing small punctures facilitate the introduction of microbes.[4] When, as in the case of printers,[3] there is exposure to inks containing "driers" and to a fat solvent like benzol, the dyes in the ink aid in damaging the dry skin and retard healing. When dirt and oil block the small glands at the root of the hairs, folliculitis, somewhat different in causation, may complicate the case.[5] The degree of natural oiliness in the skin of different individuals varies considerably, and where it is most pronounced the tendency to dermatitis is least. Careful bacteriological investigation[6] has failed to incriminate the oil as the necessary carrier of infection, even though it may act in this way; indeed, certain paraffin oils, produced in the process of pressing paraffin wax, encourage bacteria breeding,[4] but the bacteria have no power for evil until they have secured ingress to the skin.

The position may be briefly summarised as follows: (1) Oils of all types and other fat solvent fluids are liable, if they come in contact with skin for some time, to produce dermatitis; the underlying cause is desiccation with subsequent cracking of the skin. (2) The exact form of dermatitis which results depends on the infective organism or organisms which obtain access. (3) The organisms are not usually present in the oil, but exist on the human body; therefore the dirtier the skin the more readily is it infected. (4) Prevention depends first upon cleanliness, and secondly upon restoring the dissolved fat by anointing the skin with such a mixture as equal parts of lanolin and castor oil. (5) Treatment consists in removal from exposure and entire rest to the affected skin by covering it with a flexible paint, such as is used in treating burns.

AN ACQUISITIVE SOCIETY.

STRAWS show the way wind blows; at present there is a movement in the wind of popular thought in regard to social reorganisation. Whether this movement will prove to be stimulating to the health of the body politic or not, the medical profession, which is so intimately associated in its work with the whole community, cannot afford to disregard any indications. A new book,[1] by Mr. R. H. Tawney, is perhaps part of the wind rather than a straw pointing its direction. Its author has previously published his main thesis in a pamphlet "The Sickness of an Acquisitive Society," but in his present volume he sets forth his case more completely. Briefly, the contention is that property should always carry with it responsibility, and that property which carries no responsibility is a drag on the wheels of social progress. He gives the term Acquisitive Society to a community which acquires property and, neglecting all duties, merely asks "May I not do what I like with my own?" Among such property, called Functionless Property, are grouped mining royalties, ground rents, and shares in limited companies; rewards here are divorced from services; a class of pensioners upon industry is created; and in consequence those who labour, but who do not by their labour command their full reward—that is, the great majority of mankind—are degraded. Acquisitive Society reverences the possession of wealth; a Functional Society would honour, even in the person of the humblest and most laborious craftsman, the arts of creation, and would fix the idea of function as a principle, upon which all remuneration should be based. The reader will peruse with interest the methods by which Mr. Tawney proposes to reconstruct industry and commerce. He seeks to convert industries into professions which always recognise the relation between payment and effective service; to this end he sees promise in movements like that of the Guild of Builders which eliminates dividends, provides for all men "on the strength" when work is slack, and supersedes profit-making employers. He advocates a fixed rate of interest on industrial capital, instead of unlimited profits with limited liability, as a first step towards lightening the strangle-hold of capital upon labour. Only faint praise is given to nationalisation, as that term is usually understood.

The chapter dealing with the brain-worker and the growth of an intellectual proletariat is one of great interest. Under the organisation of industry advocated, the brain-worker might be expected to come into his own. The medical sociologist cannot fail to be deeply interested in the cogent arguments put forward; but he will find no appreciation given to the tenet that every community possesses the social organisation it deserves, an organisation which represents its capacity for healthy thought. He will find himself then wondering whether a healthy nation

[1] Annual Report of Surgeon-General of Public Health Services of the United States for the year 1920, pp. 35. Washington.
[2] Collis, E. L.: Dermatitis in Tobacco Workers, Annual Report of Chief Inspector of Factories, 1910.
[3] McConnell, W. J.: Industrial Dermatitis among Printers. Public Health Reports, vol. xxxvi., No. 18, May, 1921. Washington.
[4] Causes of Skin Sores and Boils among Metal Workers. An Investigation by the Houghton Research Staff. E. F. Houghton & Co., Philadelphia, 1920.
[5] Bridge, J. C.: Memorandum on Cutting Lubricants and Cooling Liquids, and on Skin Diseases produced by Lubricants. Dept. Scient. and Indust. Research, Bull. 2, London, 1918, pp. 8.
[6] Page, C. G., and Bushnell, L. D.: Oil Folliculitis, Journ. Industr. Hygiene, June, 1921.

[1] The Acquisitive Society. By R. H. Tawney. London: G. Bell and Sons, Ltd. 1921. Pp. 242. Price 4s. 6d.

is not the first requirement for obtaining a wholesome organisation, and whether the finest of organisations on paper would not in practice fail if applied to an unhealthy community. The crucial questions are: Would a healthy organisation convert an unhealthy community into a healthy one? Or would a healthy community convert an unhealthy organisation into a healthy one?

A STUDY OF ARTERIO-SCLEROSIS.

DIFFICULT and controversial as are the pathological problems involved in the study of the condition of diffuse hyperplastic sclerosis, its clinical relations and associations are even more complex and elusive. Dr. Geoffrey Evans [1] having come to the conclusion that the underlying process in this, as in other forms of arterio-sclerosis, is inflammatory, proceeds to study the clinical conditions associated with it—namely, raised blood pressure, cardiac hypertrophy, cerebral hæmorrhage, and chronic renal disease, more particularly in their bearing upon his conception of its inflammatory nature. In studying the post-mortem records of heart-weights in a 20-year period at St. Bartholomew's Hospital, he found that, where chronic heart and lung conditions could be excluded, a post-mortem weight of 15 ounces and over generally indicates the presence of diffuse hyperplastic sclerosis. On the other hand, this condition can be found without cardiac hypertrophy in exceptional cases. In regard to raised blood pressure, Dr. Evans makes the statement that a persistent systolic blood pressure of 190 mm. Hg or over is evidence of diffuse hyperplastic sclerosis; indeed, he believes that it is the only adequate clinical sign of diffuse arterial disease. In other words, he regards the clinical condition to which the term hyperpiesia has been applied as in reality the expression of diffuse hyperplastic sclerosis. He suggests that syphilis is a cause of an increased mortality in cases with hypertrophied hearts about the age of 45, and he believes that syphilis is a cause of cardiac hypertrophy and diffuse hyperplastic sclerosis, with a maximum effect at about this age. On an analysis of the records of cases of cerebral hæmorrhage, investigated by him, he finds suggestive evidence that two types of arterio-sclerosis may occur in association with it, one being diffuse hyperplastic sclerosis, the other a more patchy or local form, probably of senile type. The most important part of the clinical side of his paper is that dealing with chronic renal disease. He states that he has found evidence of inflammatory change in all the kidneys he examined which were the subject of extensive disease. He claims that this fact supports his contention that the arterial disease associated with renal disease is also inflammatory in origin, and he would solve the riddle as to whether the kidney disease is the cause of the vascular changes or vice versa, by the thesis that both are the simultaneous result of a common cause, though this may be of varying kind and intensity in different cases. He suggests that in acute conditions the epithelial reaction dominates the picture, and that when the process induced by the pathogenic cause is chronic, epithelial and vascular changes both result and therefore coexist, while in very chronic cases only the vessels suffer. In such manner the different appearances in chronic diffuse nephritis, in true chronic interstitial nephritis, and in arterio-sclerotic kidneys are to be explained. Dr. Evans's views are to some extent speculative, although based on a careful and ingenious analysis of his laborious histological, post-mortem and clinical investigations. Their chief value lies in their suggestive character, for they open up fields for fresh research. Further elucidation may be expected from the biochemical investigation of renal function in medical diseases of the kidney which is now being pursued by several workers.

[1] Quarterly Journal of Medicine, April, 1921, p. 215 (vol. xiv., No. 55).

THE INTERALLIED NEUROLOGICAL CONGRESS IN PARIS.

THE second annual Interallied Neurological Congress, organised by the Société de Neurologie of Paris, has been held and was from first to last a complete success. Delegates attended, officially or otherwise, from Great Britain, United States, Italy, Belgium, Portugal, Spain, Denmark, Sweden, Holland, Switzerland, and China. The subject announced for discussion was "the Parkinsonian syndromes"—i.e., paralysis agitans, idiopathic and symptomatic. Four sessions of some three hours each were devoted to this topic, yet neither the supply of speakers nor of material showed any sign of running short. It is safe to say that some ten years ago a discussion of paralysis agitans of this length, and width, would have been quite impossible. But the disease is one which has come prominently to the fore within the last decade and that for two main reasons. An immense impetus was given to the study of the subject of extrapyramidal motor disease by the work of the Vogts and of Kinnier Wilson in 1911–12; from that time the syndrome of the corpus striatum and the whole conception of striatal disease passed from mere speculation to the rank of a new and properly grounded chapter in neurology. Only those who have followed the matter can have any idea of the vast literature on the subject that has since accumulated; as was generously said of British neurology at the Congress, progressive lenticular degeneration, a striatal disease par excellence, has gone right round the world, and if the contributions of British origin can still be numbered on the fingers of one hand, they have been made by the score on the continent and in the United States. Paralysis agitans has naturally benefited by this renewal of interest, for, like many other extrapyramidal conditions, it is characterised by a combination of involuntary movement with muscular hypertonus, and its resemblance in several cardinal features to progressive lenticular degeneration—an affection with a known pathology—has furnished an obvious guide for neuropathologists. Henceforth, all search for the cause of Parkinson's disease in muscles, peripheral nerves, motor nerve end-organs, and Betz cells, must be abandoned. The second factor in the development of the subject has undoubtedly been the remarkable number of post-encephalitic cases of symptomatic paralysis agitans; with the fresh appearance of epidemic encephalitis in one country after another the crop of Parkinsonian cases has been ever increasing.

At the Congress M. Souques gave a clinical demonstration of some dozen patients, mostly young people and some mere children, every one suffering from symptomatic Parkinson's disease as a sequel to encephalitis, and their appearance in a row facing the large audience was peculiarly impressive. No one can doubt that so definite and specialised a clinical picture must correspond to an equally defined pathological entity. What is this pathological basis? According to the work of Ramsay Hunt, the Vogts, Lhermitte, Foix, and others, degenerative or destructive changes in various cell- and fibre-systems of the corpus striatum and its efferent connexions to the corpus luysii, locus niger, nucleus ruber, and other mesencephalic cell-groups, are followed by the appearance of rigidity and involuntary movement and these changes are declared to be the essential pathological feature of Parkinson's disease. Lhermitte, employing the method of Casamajor, has demonstrated the existence of fibre (myelin) degeneration in paralysis agitans in the efferent (striofugal) systems to the above-mentioned nuclei, and Foix, more particularly, has found degenerative changes in the locus niger in every one of several cases of the affection. The Vogts have recently published an account of their examination of no less than seven cases of the disease; in all of them a noteworthy degree of atrophy of the putamen-caudate and to a

less extent of the globus pallidus, with loss of cells and fibres, was found; there was a general rarefaction and absorption of tissue in the vicinity of the blood-vessels in these basal nuclei—a kind of état criblé. Thus, though there may be as yet no precision or exactitude in regard either to the site or the nature of the pathological alterations, no doubt can be entertained of the general localisation of the morbid changes. Further research ought to be devoted as much to the physiological mechanisms involved as to the morphology of the lesions. There is room for more intimate study of the problem both of muscular hypertonus and of involuntary movement, and the syndrome of paralysis agitans is not to be divorced from others which are equally characterised by rigidity and one or other type of hyperkinesis. Lesions of the cerebellum, for example, and mesencephalic lesions, may reveal themselves by disorders of tonus and by involuntary movement, and the same is true of the optic thalamus. Only by taking a large view of the question can we arrive at informative results. The widespread interest aroused in neurological circles at home and abroad apropos of the corpus striatum and its syndromes is calculated to prove less useful than will otherwise be the case if due attention is not paid to the occurrence of combinations of dystonia and involuntary movement that are shown to be independent of structural lesions of that part of the brain.

THE GOLD MEDAL OF THE ROYAL SOCIETY OF MEDICINE.

As we have already announced, the first award of its Gold Medal will be made by the Royal Society of Medicine to Sir Almroth Wright. The gift of the medal has been instituted as a method of recognising original discovery in medicine or other allied sciences. It will be awarded triennially, and the prize can be given for the practical application of the results of previous investigations of other scientists as well as for new and personal work. This is a thoroughly sensible admission that the finest contributions to the art and science of medicine must be founded on the work of predecessors. All such progressive work is original in the best scientific sense, and the Royal Society of Medicine has been wisely inspired in its declaration of the fact. Sir Almroth Wright will deliver a lecture before the Society on Wednesday, July 6th next, when the annual general meeting of the Society will take place and the medal will be awarded. The design for the medal is the work of Mr. E. Carter Preston. It bears on the obverse the figure of Hygieia bestowing a wreath upon Research, typified as a figure carrying a lamp. At the bottom of the obverse side of the medal is the legend "Non est vivere sed valere vita." On the reverse we have Æsculapius supported by Chiron, the wise centaur, his master. Below the centaur we see the serpent of Æsculapius and the bow of his father Apollo. On the field are the words "Finis coronat opus."

ROEHAMPTON AUXILIARY HOSPITAL.

LAST week we published an account by Dr. C. Jennings Marshall of the admirable work of the arm-training centre at Roehampton, in which he dwelt on the demoralisation and resentment of a man who suspects that he has been fitted with a badly-fitting artificial limb and the psychological effect of the provision of a comfortable and useful one. Queen Mary's Convalescent Auxiliary Hospitals at Roehampton, for sailors and soldiers who have lost their limbs in the war, are this week celebrating the sixth anniversary of their opening. Over 41,000 officers and men have suffered amputations of the leg or arm owing to the war and, though other centres for the supply, renewal, and repair of artificial limbs have been organised by the Ministry of Pensions, Roehampton has dealt with a very large proportion of these service men. 1324 officers and 21,339 N.C.O.'s and men have passed through the hospital, as new patients, since June 28th, 1915; readmissions of all ranks for second limbs and repairs amount to 55,707, and this figure does not include the 16,518 cases dealt with by post. 8453 men have received training in instructional workshops opened in 1916. Of these the employment bureau has found work for 4987, and has made arrangements for further training for 4166.

In 1918 arm instruction classes were instituted, and many who had found artificial arms an encumbrance were taught how to get the utmost work, and indeed enjoyment, out of their use. Dr. Marshall, in his article, emphasised the keen interest taken by the men in their own manipulative progress—not confined to progress in work, but also in sport. The sight of those who in a few weeks are able to play cricket and golf must indeed be stimulating to the neurasthenic who enters the hospital despondent as to his chances of getting any fun out of life, even should he ultimately be able to work. The in-patient accommodation at Roehampton has now been reduced to 200 beds, for which it is hoped to get permanent endowment, but since between 50 and 60 men attend every day for major and minor repairs the out-patient department is still busy, and likely to remain so. An account of these hospitals will make one of the most inspiring chapters of the medical history of the war.

THE METROPOLITAN HOSPITAL SUNDAY FUND.

IT is too early to judge the results of the appeals on behalf of the metropolitan hospitals which were made from pulpits in London and elsewhere by ministers of all denomination last Sunday; but never was the need of our hospitals greater than it is at the present, and it is earnestly to be hoped that, when the totals are announced, we shall learn that an aggregate sum has been collected surpassing that of any previous year in the history of the Fund. In the past the appeal has been made on the grounds of a common humanity, but the events of recent years have added new impulses to the conscience of the people, and we may fairly look for their expression. The part which our houses of healing played in winning the war, and in ministering to the needs of its victims, will surely have its influence over the purses of many. But what is necessary is permanent effort as well as a quick and special response. Sir James Paget, wisest and best of men, nearly 70 years ago said: "If in all our improvements of our means of life, only half the trouble had been taken to prevent or remedy the future evil, that was taken to attain the present good . . . . our state might have been far different." The report of Lord Cave's Committee shows that the voluntary system of hospital support must be maintained and indicates the way in which the money can be provided. The Government has responded promptly—though to only half the amount mentioned as an early requirement—by voting £500,000 in aid of deficiencies in the funds of the voluntary hospitals during the year, and the Minister of Health has expressed the opinion that the balance should be found by voluntary effort. This should be forthcoming from a national and coördinated effort, and it would be a splendid incentive to such effort if the Metropolitan Hospital Sunday Fund collection this year proves to be an outstanding one in the annals of hospital charity.

THE honour of knighthood has been conferred upon Dr. John Walton Browne, surgeon to the Belfast Ophthalmic Hospital.

Mr. A. W. Sheen, C.B.E. (Military), M.S., F.R.C.S., has been appointed Professor of Surgery, Welsh National School of Medicine from Oct. 1st, 1921.

INDEX TO "THE LANCET," VOL. I., 1921.

THE Index and Title-page to Vol. I., 1921, which was completed with the issue of June 25th, will shortly be published in THE LANCET.

CLINICAL UNITS: THEIR PURPOSE AND ACHIEVEMENT.

BY C. M. WILSON, *M.C.*, M.D.LOND., F.R.C.P.LOND.,
PHYSICIAN TO OUT-PATIENTS AND DEAN OF THE MEDICAL SCHOOL, ST. MARY'S HOSPITAL.

IT is no part of my present purpose to set forth the causes which led to the creation of the Clinical Unit System. I am rather concerned with rescuing from a brief experience extending only over a year and a half such lessons as may be helpful to those who wish to contribute to the permanence of the Unit organisation, and that may indicate the lines upon which its successful development may be best assured. The deficiencies which it was designed to meet are plainly set forth in the writings of Osler and of Sir Clifford Allbutt, in the reports of the General Education Board of America, in the report of the Royal Commission on University Education in London of 1913, and in the contributions of Sir George Newman. It was planned to provide leisure for research and for meeting the growing educational demands on the time of physicians and surgeons, to provide the future heads of English medicine with a more scientific training, to protect their waiting years from the tyranny of routine and from financial anxiety, and to other ends which will presently appear.

The Teaching of Experience.

The Johns Hopkins Hospital in America was the first to put into practice, in 1913, the Clinical Unit System. In England, owing to the war, it was not until 1919 that the Board of Education granted the same opportunities to four of the London schools: St. Bartholomew's, St. Thomas's, the London Hospital, and University College Hospital. In the spring of the present year the London (Royal Free Hospital) School of Medicine for Women applied for and received a Unit in Gynæcology and Obstetrics, and later Clinical Units in Medicine and Surgery were recognised at St. Mary's Hospital. It is only possible, therefore, to enter a provisional opinion, which may have to be modified in the light of a fuller experience of the Unit organisation. There are incidentally good reasons for caution in extending this system. The cost to the State is considerable, and to the schools it may even be prohibitive, while it cannot be said to have been proved as yet that teaching, care of patients, and additions to knowledge are all so much better under the full-time scheme that every medical school should hasten to fall into line. We are, too, far from certain that we have more than a few among the younger clinicians who are willing and capable of the direction of these Units. There are not wanting signs that the supply of these men is limited, and that if the demand be immediately increased a very different type of man will have to be called upon. And quite apart from personnel, not every school is fitted for a Unit, either in laboratory equipment or in the educational motive without which the life of the Unit can only be brief, troubled, and unproductive. We wish for assurance, before committing the State to a larger outlay, that our schools number among the more promising of the younger generation sufficient men who are willing to work for university rewards, rewards that can never hope to rival the prizes of a worldly career on the latter's own ground. There is, however, no reason to suppose that men will not be found who, in order to procure ideal conditions for clinical teaching and investigation, will be willing to renounce monetary rewards. For a full-time clinical chair appeals to the idealism that is more common than many know. But, though it is probably a libel to say that good men will never become Directors since they can make more in practice, it is a totally different proposition to expect that the man who has so ordered his life that he may engage in practice will be ready to forgo the advantages of which he has had experience for the prospective rewards of a life which has no sharp outline in his mind.

Units may be mere pretentious names. They may mean no more than an insurance taken out by an insecure school against impending dissolution, a comfortable sinecure for an indolent man who lacks the energy and vitality to conquer in the competitive world. This is the old system under another name, the same thing in a new dress. We have to ask, have we in fact got any fundamental addition, have we a man of ideas as Director? It is well for the reputation of the system that the number of schools in which it will be tried at first will be limited by financial considerations. These Units are not to be regarded as a mere addition to clinical teaching, something that will atone for the irregularity of attendance and the broken service that is given to the pursuit of knowledge under our present system, not as new facilities for tutorial instruction to be bestowed upon those schools which, by their tradition and size, wear an air of permanence. They should be granted as the spear-head of an active, restless, and progressive school, when, and only when, the university authorities are satisfied that a suitable man is forthcoming as Director.

But if we are satisfied that these conditions obtain, what are the advantages that a school may reasonably anticipate if it should adopt units? As physicians we are impressed with what we do not know, but at least the worker in the Unit enjoys the comfortable assurance that in a scientific sense he knows more about his patients, and that if he does not add his quota to knowledge it is not for lack of opportunity. He has a new freedom: he is no longer obliged to devote the better part of his days to the support of his family by some form of practice. He has leisure. That men can be too busy to stay to meditate, that they should pass their days and know nothing of "the fruitful hours of still increase" is a hard decree. In fine, Units can do no more than give the right man a fair chance to carry out good work. This is the issue. Can we, without the Unit organisation, reap the advantages of a body of physicians who engage in research, and if we cannot, is it well with education and with our ways of adding to knowledge?

We shall, then, jealously guard this new freedom which the more hopeful among our younger clinicians are likely to enjoy. We shall plan, too, so that we do not exchange the tyranny of one form of routine for another, that the time of the Unit is not eaten up with the "treadmill of the classroom." If all students pass through the Unit under the personal supervision of the Director, it is idle to expect of him original and productive work. And if we make of the Director no more than a coach we have defeated our own ends. The system, born in hope and faith, will have achieved nothing but harm. But, if we guard this precious leisure of the Unit worker, we shall foster a mood, a frame of mind, very friendly to fertility: the Director will value his office not alone for its facilities for teaching, but also for its unique opportunities of learning.

For the student Units may mean no more than expert coaching—this is the danger. He may value greatly what from the educational point of view is of little account. Wherefore we must look to the wise provision that entrusted these appointments to an outside body with university ideals to protect the system from abuse. Where it is prudently administered the system may give the better type of student a deeper insight into the intricate ways of disease. It can scarcely fail to widen his outlook over the whole field of medicine and surgery. And if the Director is a reflecting man, his constant contact with students must sharpen their curiosity, quickening the legitimate ambitions of their calling.

The patient, too, can but benefit when diagnosis is built up on the more elaborate methods which are only possible with the leisure which the Unit confers. These advantages will, however, be dearly bought if students are led by the Unit organisation to look on patients as so much clinical material. For it is the spirit of units that matters, a false step in the beginning may vitiate everything. To this point we shall

return when we come to consider whether the Director should be allowed private practice. It is significant in passing that ward sisters like the Unit system, though it throws increased burdens on them and on their staff.

The Possibilities of the Unit System.

These are the more obvious reflections which our experience of Units suggests. But we cannot come to a decision as to the merits of the system on such a simple basis, and I am of one mind with Prof. Janeway, Director of the Medical Clinical Unit in the Johns Hopkins Medical School, who, in a brief account of his first year's stewardship rendered to the General Education Board, wrote: "The real success or failure of the plan will be best appraised from the careers of the men who now are receiving their training on the staffs of such departments." I agree with him that "if the professorships of medicine in our best schools ten years from now are being filled from the ranks of these men, and under their influence our medical clinics are becoming actively investigative university departments, then the whole-time system will have demonstrated its effectiveness." This is the crucial test, and we must await the result. But we shall wait with no misgivings, for if the right spirit inspire the Units they will be schools for teachers in the broadest acceptance of that term. The teacher must assimilate new knowledge before he can add it to the diet of the student. I would take a parallel from the ways of nature and the life of the fields. The plant needs nitrogen, but cannot use the nitrogen of the air until it is made into nitrates; only the clover family, by virtue of symbiotic bacteria, can make use of the raw material so that it is available for its own use and for the use of other plants. The teacher is the clover, taking the abundant raw material of new knowledge and changing it to the form in which it can be used by students.

Under the present system the waiting years are swallowed up in routine work by the faithful performance of which promotion is earned. I have faith that Units will break this down. There has always been a certain amount of intercourse between the leaders of the profession in different countries, but practically none between the younger generation. In the years when such intercourse counts most we do not join in discussion with the hopeful of other lands. It should be possible to effect some system of exchange by which American universities would send to us young men to work on the staff of the Units, while by reciprocal arrangement the more curious of the new generation would receive at an impressionable age the quickening impulse that comes of travel and the assimilation of new ideas. We may hope that those who have been responsible for the visits to America of certain of the Directors of Units will be able to arrange that the Assistant Directors, upon whom so much of the future of Units depends, will receive like opportunities. We shall at least require of the new generation that it is not content to live apart from all the rest in its own town or city—that if we work in London we shall remember that there are fair cities beyond Jordan, and that in modern times the provinces have perhaps contributed more than their share to English medicine.

And then there is the evil of premature publication which leads men to think in terms of opportunism and saps their intellectual integrity. We are in haste to "trumpet abroad our acquirements." Here Units which remove the motive may cure the disease. Most of us write too much and too soon, unmindful of the counsel of St. Chrysostom, beloved of Osler: "Depart from the highways and transplant thyself into some enclosed ground, for it is hard for a tree that stands by the wayside to keep its fruit till it be ripe." We may ask of the Units another spirit, the spirit in which our cathedrals were built through the centuries, our tapestries woven, and our manuscripts illuminated, in the faith of all exquisite work that is not hurried nor slipshod. In this regard it is singular to note in the regulations governing the appointment of the Directors at one school that they are required to reside within a certain distance of the hospital. If we must be for ever laying down regulations I would have them live in the depths of the country, but I would be not unmindful that if you ask for the things of the spirit you cannot by rule and regulation make sure of receiving them. The hour is scarcely kind to the art of the physician. There is something in the time and in our tastes that is not friendly to leisurely observation. We ask that these workers should pass tranquil days, a little away from the dusty paths of life, so that clinical medicine may receive a measure of the service that is freely given to other sciences. We would not have the Director hurried out of thought, but that without losing touch with the realities of the world in which he must play his part, he shall say to himself the words graven on Hazlitt's sundial, "Horas non numero nisi serenas." There is another aspect. Of the factors which count as the most influential in moulding the student, nothing is so important as the mute example of the lives of their teachers, and it is surely not without profit that we should have in our midst a body of men whose lives are given to something other than the lucrative rewards of private practice. There is held up before students an alternative to monetary prizes, and that alternative is the Unit system.

There are, too, more utilitarian services that Units can perform. They furnish an opportunity of reorganising the out-patient department of a hospital, so that it may be of greater value in studying the beginnings of disease. At the present time if assistance is rendered to the out-patient physician it too often takes the form of a sorting department, so that in the issue no case has access to the physician unless stamped by the physical signs of advanced and incurable disease. In our haste to teach signs we throw away more precious opportunities of learning. On the other hand, the criticism has been directed against the Unit organisation that the class of case admitted to the Unit wards lacks variety because many of the most interesting cases in the wards of a consulting physician are sent to him by practitioners, and if the Director does not practise, his wards are no different from those of a general hospital without a teaching school attached. The remedy lies in the development of the out-patient department of the Unit, and in sending away the patient so satisfied that he becomes a recruiting agent. There is far too much delay before a patient is seen, and in more ways than one the out-patient department from the human point of view is out of date. It profits nobody that the working woman with a large family should wait three hours to get her medicine repeated, with a perfunctory word or two on the part of an exhausted physician. Where out-patients are treated in a kindly and considerate manner they multiply. The reform of the out-patient department bristles with difficulties. We need a kind of social service in which there is a medical counterpart to the lady almoner and a follow-up department that will accompany the patient to his home, with a view to checking the out-patient turnover, the large number who draft from one hospital to another. But the Unit will never lack material in London. On the contrary, there is a real danger that it may have too much. If the Director is asked to take charge of a large number of beds he will be fortunate to escape a new form of routine. Surely the value of experience is "not in seeing much, but in seeing wisely."

In measuring the benefits which it is customary to ascribe to the Unit organisation we shall not be put off with fine phrases. Do Units, for example, bring about in fact as well as in name a closer union between clinicians and workers in the laboratories? There is a desire for a more intimate relationship. Are Units the proper means for securing that end? Are we on the clinical side more ready and more willing to make use of knowledge born in the laboratory, and are they, who have hitherto been cut off from the inspiration of clinical phenomena, finding,

as we bring them into the wards, new subjects for inquiry? Do we stimulate each other? It is early days to enter judgment. It would appear, however, that the physician is becoming more conversant with what can, and what cannot, be done in the laboratory. He does not so frequently refer a problem to his scientific colleagues when he would hold his hand if he had possessed but a rudimentary knowledge of the possibilities of their technique. It is not irrelevant that at St. Mary's, since units were inaugurated, a club has sprung into being, attended by the personnel of the units and by the staff engaged in the pathological, bacteriological, and other services. At these meetings the subject is approached from every angle, and the club appears to fulfil a useful purpose. Should the Unit do its own routine pathology and bacteriology, or should the work be carried out in the pathological department of the hospital? We have no doubt the latter is the better course, and that the temptation to make the Unit self-contained is to be resisted.

In the practical working of the Unit organisation there are two problems that recur again and again and press for a solution. Should the Director give all his time to the duties of his office, and not engage in private practice, or should he be allowed a limited amount of private practice, devoting the greater part of his time to the Unit? And what should be the relation of the Units to the rest of the staff of the hospital?

Whole-Time or Part-Time.

Some will have it that a sharp break with the old system is required, that only whole-time appointments are worth considering. Others, for example the physician and surgeon nurtured in another school, who are of a mind to get the best out of both worlds, are as certain that the Director of the Unit should be allowed to practise. The man who belongs to neither camp can only envy the facility with which in either case a decision is reached. If the Director be allowed practice, if he be a man of parts and personality, he will doubtless prosper, and his thoughts and perhaps his person will fly away to the dusty traffic of the busy consultant's life. And if he be without these gifts he is no man to vitalise this new way of teaching. Moreover, research and the sober reflection in which it has its being scarcely thrive in the hurry and press of practice. So much is plain enough. On the other hand, there is a real danger, although it is less obvious, that the whole-time official debarred from practice will grow into an academic figure whose usefulness is threatened by the evils which afflict a whole-time service, that this man, deprived of the quickening impulses which contact with the outer world brings, will become isolated, and that his influence and very teaching may lose their touch with realities. He will miss the humanising influence of practice, and his mind may shrink, since it lacks the widening sympathies which contact with the outer world excites. But if he is so fortunate as to escape the creeping paralysis that to younger men is the bane of the academic life where the competitive stimulus gives place to security, his later years will be enriched with the rewards of his unusual opportunities. Frankly I am less impressed with the alleged scientific advantages of practice, though it cannot but be valuable to see a patient in his environment. In America a compromise has been effected. At the Johns Hopkins Hospital the full-time staff are allowed perfect freedom to see private patients. They have their consulting rooms at the hospital, and the fees taken are added to the funds of the Unit organisation. In 1913 such fees amounted to $10,000, while it cost $110,000 to maintain the full-time services in medicine, surgery, and pediatrics. From this it might appear that the clinical teacher freed from the necessity of earning fees finds little that is scientifically or educationally valuable in private practice. But we shall accept that conclusion with caution, bearing in mind that it is not in human nature to engage in private practice for the benefit of an institution, and that incidentally it is in direct conflict to the experience of Sir William Osler, the integrity of whose judgment is not open to question. Further, we have to remember that this was the first year of this arrangement at the Johns Hopkins Hospital, and that the Directors, though famous in their art, were in the main imported from other cities. We believe that Unit workers should be allowed to see private patients at the hospital, and to take fees. Carried out at the hospital the system protects itself from abuse, and in America, as we understand, it works happily. Further, no other system seems to bring permanent peace and contentment to the Unit personnel and to provide a proper field of recruits for vacant directorships. This provision would go far to satisfy the considerations that weigh with many men who will not at present allow their names to be put forward as candidates for Unit appointments. They are not so much reluctant to give up the emoluments of practice as to embark upon a system which is admittedly on trial. They do not care to burn their boats. If they were able to return to practice in five years' time in the event of Units at their schools being abolished, the field for these appointments would be greatly strengthened. This applies particularly to surgery and gynæcology and obstetrics. Nevertheless, though there are sound reasons for their caution, I look for another spirit in the man who will make of the Unit a vital thing. If he possess imagination and the qualities without which success must be wanting he will not dread failure. He will know that if he can make of this organisation a living addition to medical education, he has little to fear from passing phases of financial stringency. He will go forward to his task with a good faith in his mission, and with a modest belief in his own power to accomplish it.

Relation of Unit Workers to the General Staff.

It were impertinent on my part to combat the foolish sayings of those who persist in looking upon the personnel of the Units as a race apart, immune from the frailties and temptations of a consulting physician. They are simply different persons discharging different functions, and this separation of function is required by the increasing complexity of science and social life. The consultant has duties which the Unit worker cannot usurp, his practical views are a useful antidote to the idealism of the full-time worker. They are sister services, or if there must be a question of seniority, then the general consultant belongs to the senior service. Certainly there is no antagonism between the scientific and the practical physician, and the relation between them can only be solved on the basis of experience. One thing is already clear. The Unit must be an integral part of the organisation of the hospital, it should in no circumstance be allowed to become an extraneous growth. It will be responsible for the coördination of the teaching of the general staff, but of that teaching it will itself form but a small fraction.

Meanwhile Units have their own pitfalls and traps for the unwary, and it may be profitable to dwell for a moment on the particular dangers that lie in the path of the system. The peculiar merit of the older regime was in the intimacy which existed between student, teacher, and patient. There is a danger that in the attempt to raise schools to a university standard we shall have fewer and larger institutions, and that the popular and accepted teacher, who is not unlikely to gravitate to the Unit attached to such schools, will be surrounded by a horde of students following him round his wards. Now those who are seeking true educational ideals have as much reason to distrust academic eloquence and the arts of the orator as any other form of persuasive speech which appeals now, as always, rather to the emotions than to the intellect. They discriminate clearly teaching and talking. It must be the constant aim of the Unit not to substitute large classes for the

intimate methods of the older system, but rather to carry this intimacy a step further. At the London Hospital the Director and his three assistants each devote one whole morning every week to not more than one or two clerks, who in this manner profit by a personal guidance in the management of their own cases, which in the past has been given only by the house physician. There are dangers, too, of the effect of routine in this new life of the worker as great as any in the past. We have but one safeguard against these and kindred perils. It rests in the knowledge of the type of man who is needed as Director, and in the determination to appoint as Director none other.

The Future of the Units.

Excessive anger against human stupidity is itself, as Lord Bryce has reminded us, one of the most provoking of all forms of stupidity, and we shall do well to remember that criticism of the Unit system may proceed not at all from prejudice and ignorance, but solely from an honest review of the character and history of English medicine. We shall profit more by listening to the strictures of the opposition, than from many of the ill-considered eulogies of Units that have been heard in debate. If they are a natural step in the development of medical education, an evolutionary step, they have nothing to fear from passing political phases, or from the opposition which all new things must face. At the worst they may disappear temporarily, to reappear later in another and better form. But if they are only an ill-digested experiment on the part of certain theorists, then their end cannot be long delayed by the zealous idealism of youth. In the main it is true that we cannot be in a position for at least ten years to appraise the advantages and disadvantages of Units. Meanwhile they may come to an untimely end for one of two reasons. Firstly, economists, and just now they are rightly in the ascendant, may ask for a justification of such expenditure at a time like the present. And this may happen either in respect to the grant by the State, when the agitation will be political, or in the councils of the school, when it will have its roots partly in the impatience of certain of the older clinicians with a system with which they dispensed in their day, without, as they think, incurring serious disadvantages: partly in a more rational if somewhat shortsighted agitation founded upon the embarrassment of the schools' finances by this new call. Secondly, the men to staff the Units may not be forthcoming. The Unit personnel will, in that event, be overshadowed in point of achievement by other members of the general staff. It will then be asked, not without reason, why so much money should be expended with so little apparent result. If, therefore, we desire to secure for the Units a fair trial, if we wish to persuade men to suspend their judgment for a decade, we have to convince the more impartial that something has been added to medical education. For if at any time they should decide without bias that the Units supply in essence nothing that is not provided by the existing staff, the days of the experiment are numbered, and a precious opportunity will have slipped through our hands. Accordingly, men who have faith in the Unit system are concerned that no verdict should be pronounced upon it until it has had a fair trial, and they are keenly alive to the fact that they can only achieve their end by the appointment of Directors who are equipped to pilot the system through these troublous years. It is, therefore, of no little moment to crystallise in our minds the essential qualifications that fit a man for this difficult task.

The Qualities Needed in a Director.

Clearly he should be capable of wise and devoted leadership, for his task is no less than to bring out of his school the practical idealism which is latent in it. But I shall not dwell in the first place on his capacity for organisation and research, though they are all-important, since they are less likely to be overlooked when they appear than the qualifications which he must possess as a teacher. With regard to those qualifications plain words are in season. Primarily the Director should *wish* to teach. He needs a zeal that is constantly fed by the stimulus of new knowledge. Then, if he be the man we seek, he will borrow from his daily contact with the more hopeful among students the elixir of teaching life, and it is very necessary that he should do so. For when teaching is a mere matter of routine, it is only talking, the man is a phonograph, there is nothing vital in him. Again, it is the very essence of the Unit system that he should be given the opportunity to remain a student, and if this is necessary to vitalise his teaching it is no less fitting in his relations with students. We shall call to mind the warning of St. Thomas à Kempis that "learned men are very willing to seem wise and to be called so." No pose as of a master should mark the teacher among his disciples. He is their comrade, one of the pack. Above everything the Director must hold his students. If he fail in this nothing else matters, and if we wish for assurance that he will not in fact so fail in the future, we shall require proof that he has succeeded in the past.

With regard to research, where a candidate possesses the necessary credentials no difficulties will arise. But where the right man is not available we may be tempted to be put off with the second best. There may grow up a tendency to take from his laboratory a work-a-day fellow, without ideas, without any educational purpose whatever, with indeed nothing to offer but his own technique, and to place him in charge of wards, so persuading ourselves that the problem has been solved. No wiser plan this than to take your mediocre physician or surgeon and to put under him a laboratory, buttressing his ignorance with a junior assistant or two conversant with technical methods, and then to claim him as our scientific physician armed at all points for the great adventure. The whole art of medicine is in observation, and if the Director has not that art he is out of place in his office. How shall we teach students to observe if we have not learnt ourselves? And is a man to come by this most difficult art by the simple means of taking him from his laboratory and placing him for a few months in charge of a ward? "Clinical teaching is not easier than laboratory teaching, it is more difficult; clinical research is not easier than laboratory research, it is more complicated." It is hoped that in the Unit organisation the Director may remain during his working life in close touch and sympathy with the resources which the accessory services are constantly placing at his disposal. Certainly it may reasonably be required of him that he add to knowledge, but if he appear to have the mental outfit that holds forth a reasonable prospect that he will in fact do so, we shall do wrong to tether him to any one line of investigation. If he adopt the Hunterian motto, "Do not think, but try," we shall be content; we want no more of him.

It is fitting here that we should speak of the problems of the Director of the Surgical Unit, and their relation to research. His task is more difficult. He may be an arresting teacher; there are many such. His technique perhaps is immaculate; it is not uncommon. What can he add that his colleagues do not already give? As I think, not a little. The estrangement which gradually grows up between the practising consultant and the preliminary and intermediate sciences is perhaps deeper, at any rate more visible, in surgery than in medicine. We shall ask of the Director of the Surgical Unit that he act as an intermediary. If, for example, the office had been in existence a decade since, we might reasonably have required of him that he should work out the physics of gastro-enterostomy, the factors that determine success or failure, so that we might not have been compelled to wait for the experience derived from

many after-histories and not a few failures to formulate in our minds the indications and contra-indications for that operation. He has a virgin field, and his harvest will ripen before that which his medical colleague has sowed is apparent above ground. We seek for the ideal, but if its fulfilment belongs to another time let us feel assured that we have found in him, who in the phrase of the Iliad is to be the nurse of men, those attributes of leadership which we recognise when seen and acknowledge as admirable in other walks of life. Where a Unit is seen to languish, where its very existence is the target of criticism, there assuredly is this vital man wanting. And so we come to our final and most pressing need, the capacity for leadership and for organisation, a need which has been grievously neglected. The Unit organisation is a scaffolding, and the building has yet to be raised up. We ask of the architect that however he may lean on the past he will bring to his work an individual offering. And we shall require of him not solely contributions to research, but also an addition to those larger educational conceptions and developments for which a unique opportunity is furnished by the Unit system. And quite apart from this opportunity the Director in a more modest way may be very helpful to those who are struggling with the educational problems that cluster round the reform of the curriculum; he will, too, have something to say about the more intimate correlation between preliminary, intermediate, and final subjects. And if he should possess a full and deep acquaintance with the great principles of the fundamental sciences upon which our art is based, I confess to hoping that in the atmosphere of the Unit organisation he will not neglect the study of the humanities.

In the task that he has set himself the Director will find his youth very precious to him. Harvey complained in his day that "few men above this critical age (40) seemed able to accept the doctrine of the circulation of the blood." Those among us upon whom that fate is beginning to cast its shadow may hope that the receptive age is nowadays a little longer, but put it as you will this affair of Units is a young man's task. He will get from the elders the best of counsel, but the faith and the driving force and the forward view must be his, and without them he is lost. To take a man past middle age and to ask him to inaugurate a new system that is foreign to all the ways of his life can lead nowhere, and it is idle, therefore, to demand of our candidate that he should come to his post with an assured fame, a name built upon years of research. We have rather to ask of authority that it should put the stamp of its recognition upon merit a little before and not after the public verdict. And this is the more necessary, for we shall ask of this man tasks of organisation which might be distasteful to, and even foreign to the talents of, one whose ways have long been set in a particular groove.

In our doubts the tendency to turn for a Director to a pale and ineffectual type, the scientific recluse who has fallen out of the ranks of the competitive world, is so strong, and so fatal to the system, that I wish to stress again those qualities of temperament and character that are needful to the well-being of the whole undertaking. It is trite to assert that the system cannot exist long if the Director has no hold upon students, but in actual practice the axiom often meets with only lip service. An appointment to a Unit falls vacant, and the candidates' credentials are freely canvassed. We reject straightway the pure clinician, and as rightly will have nothing to do with the man whose experience is confined to laboratories. Then we are in trouble. Our Admirable Crichton is nowhere to be found, and in our perplexity at last we hit upon one who appears to have a foot in both camps. We scrutinise his contributions to knowledge and weigh the value of his published research, and then if they are passably decent our task, we feel, is done. But we do not stop to inquire what imprints this man has left on his school and on his contemporaries, how far he is fitted to govern and direct. He has to steer his craft in its first voyage across strange seas, and by all appearances he will have heavy weather. Whatever other qualities he may possess that seem likely to do justice to his lofty ideals, he must have the force of character, the drive, the will to conquer in a school that may be only tepid in its welcome to his aim and purpose.

He will not be allowed to build altogether in peace, and he and his assistants in the Unit will find their salvation in Lord Morley's Essay on Compromise, with its just discrimination between compromise in the field of action and compromise in the field of thought. He will learn that while pliancy may be fitting in the first it may be near to treachery in the last. There is great need for toleration, not only that a new experiment may receive a fair trial, but also that we may approach the task in hand in the spirit of detachment befitting a great educational adventure. So only can we build not amid the distractions of personal controversy, but with the help and counsel of the elders of our calling. When sorely perplexed by the difficulties which beset the advocate of Units, and in doubt as to the real aim and purpose that we should set before us, I confess I turn for guidance not so much to the present as to the past. Everything that we want is to be found in the writings of the late Sir William Osler and of the Regius Professor of Physic in the University of Cambridge, happily still with us, though it is natural that we should think of him as of the past, for his voice has the detachment which we are not wont to associate with the daily strife and turmoil of the present. The justification of Units, if they have one, is indeed not based upon any new set of conditions, but has its roots in the orderly development of English medicine: they are but a step in its evolution, which at the present time may appear to us rather more important than it is. The aim of medical education is no different from that of education in general, and they who have looked long upon wide horizons are best equipped to counsel those of us who can only offer for the harvest of experience the enthusiasm of youth.

If literature is the effective agency of cherishing within us the ideal, it may be that in the passage of time this development in our schools will come to play the same part in medical education. Meanwhile those whose happy fortune it is to labour in this field shall have no fear that if the Unit system should come to an end their sowing will have no reaping. For if this happen some new and better plan must surely grow in its place, and the soil that has been lovingly tended will bear the richer harvest, of which harvest others in good time shall have the gathering.

TUBERCULOSIS.

German Views on Surgical Tuberculosis.

AT the forty-fifth session of the German Surgical Society many and conflicting views were expressed as to the treatment suitable for surgical tuberculosis. Prof. Bier [1] pushed his advocacy of conservatism in the treatment of tuberculosis of the bones and joints to a point that drew much criticism from several of his colleagues. In his opinion operative treatment was indicated only when amyloid disease threatened, sepsis supervened, or when severe disease of the joints was complicated by destructive pulmonary tuberculosis. Even when osseous foci of disease were extracapsular he no longer interfered with the knife, and he did not consider it invariably necessary to remove sequestra by operation even when they were septic. His belief in the spontaneous resorption of sequestra had the proverbial red-rag-to-a-bull effect on some of his fellow surgeons. He did not consider subluxation of the knee an indication for

[1] Deut. med. Woch., April 28th, 1921.

resection, but for gradual readjustment by extension and postural treatment. He left cold abscesses severely alone or limited interference to aspiration without the injection of any foreign substance. His objections to opening tuberculous abscesses applied also to those derived from the spine, and his attitude towards Albee's operation for immobilisation of the spine in Pott's disease was frankly hostile. The three remedies which he considered most important were sunlight, passive congestion, and the internal administration of iodine; even severe forms of surgical tuberculosis could be cured, in his opinion, by this trinity. He had some suggestive views on pigmentation of the skin—a process which he compared with the reaction of the body to protein therapy. This pigment, he thought, was derived from the colouring matter of the blood, and was the outward and visible sign of protein metabolism. The specific action of the sun on the affected joint was not due to local processes, but to a general reaction by which the defensive properties of the organism were mobilised. As for passive congestion, its effects were excellent, provided the dosage was suitable, and cold abscesses and the too luxuriant growth of granulation tissue were held in check by the internal administration of iodine. He had used tuberculin with considerable success in his out-patient practice, but he had seen no benefit from Friedmann's remedy towards which he had at first been favourably biased. Another point over which he differed profoundly from several of his colleagues was the harmfulness of dressings which immobilised the limb. He kept patients with disease of the lower limbs exposed to the sun in bed or with dressings which only relieved pressure without immobilisation; as soon as pain had vanished he advocated systematic exercises.

Other speakers were König, of Wurzburg; Garrè, of Bonn; v. Eiselsberg, of Vienna; Müller, of Rostock; Borchardt, of Berlin; and Sauerbruch, of Munich. The latter remarked that on one point all the speakers seemed to agree; of the great value of sunlight, even in the lowlands, all were emphatically convinced. König, who would not subscribe to Bier's rigid conservatism, referred to an *enquête* addressed to 22 leading surgeons whose answers showed that there were three chief schools of thought in this matter. The extreme conservative school was represented by Bier and nobody else, although many surgeons recognised the value of conservative treatment early in life. The intermediate school advocated operative treatment provided conservative treatment had failed after a fair trial. The third school had a penchant for resections and amputations. König himself was in favour of the operative removal of foci of disease in bone, particularly when they threatened to invade a joint; if this happened he advocated resection, and he operated at once for severe mixed infection. He threw an interesting sidelight on the subject by referring to the opposition of insurance societies to conservative treatment on account of the time it took and of the psychic deterioration entailed. Garrè disclaimed any love for passive congestion and iodine medication, and was not ashamed to confess that he injected iodoform and glycerine into cold abscesses, and that he could not dispense with dressings which immobilised the limb. He considered it advisable to dig out sequestra when they were near a joint, and he did not think it possible that definite subluxation of the knee-joint could be corrected by extension only. Winding up the discussion Bier toned down some of his original expressions of opinion, and he made the concession that plaster-of-Paris dressings might be used provided they were made to be taken off easily. Within the past seven years he had performed only about 12 major operations for tuberculosis of the bones.

Treatment of Pulmonary Tuberculosis by Deycke-Much Partial Antigens.

The literature of partial antigen or partigen treatment is already prodigious, and if quantity is in any degree an index of quality there must really be something in this method. Unfortunately many writers advocating this treatment feel more inclined to indulge in speculative digressions and in recapitulations of complicated theories than to give a plain account of results seen in the flesh. In a recent paper[2] Dr. M. Landolt, Director of a sanatorium in Barmelweid, rations himself with commendable frugality in the matter of Deycke-Much theories, and devotes himself chiefly to the technique of the treatment and the results obtained thereby. With regard to technique he greatly prefers the intracutaneous to the intramuscular injection, as the latter is apt to provoke an obscure reaction which is not betrayed till the scales show loss of weight. He also makes a point of using a separate syringe for each partigen, and for each concentration of the same partigen. Reviewing his results he shows that 75·4 per cent. of his 122 partigen-treated patients were discharged as "much improved," whereas only 47·6 per cent. of the 82 patients treated by subcutaneous injections of old tuberculin could be put in this category on discharge. A comparison of the gain of weight in these two classes was also much in favour of partigen treatment. But, as Dr. Landolt admits, the comparison was hardly just to old tuberculin, for this was given subcutaneously, and it is conceivable that, had it been given by intracutaneous injection, the results might have approximated more closely to those of partigen treatment.

The Costs of Tuberculosis.

In a paper[3] by Dr. Louis I. Dublin and Dr. Jessamine Whitney a new attempt has been made to calculate the economic cost of tuberculosis to a modern community. Their studies were instituted by the Metropolitan Life Insurance Company and the National Tuberculosis Association, and were, to a certain extent, conducted on the lines already followed by Prof. Glover. They find that wage-earning white males lose 3·5 years in all or 7·6 per cent. of their entire expectancy. Coloured males and females lose about five years of life. It is also calculated that a loss of one year of life is equivalent to a loss of not less than $100 in national wealth. As tuberculosis cuts approximately two and a half years from every individual, the loss per person is at least $250. This, in a population of approximately 106 millions, represents a loss of over 26 billion dollars. Nor does this calculation include the very large additional losses entailed by long periods of ill-health due to tuberculosis. This paper is a powerful plea for combating tuberculosis for economic as well as for humanitarian reasons.

The Rôle of the Tonsils in Pulmonary Tuberculosis.

According to medical travellers returning to Europe from a tour of inspection of the leading clinics in the U.S.A., the tonsils are at present looming large on the American horizon as foci of disease. It remains to be seen whether the wholesale shedding of its tonsils by a civilised community will greatly reduce the incidence of diseases such as rheumatoid arthritis, but there is already a considerable amount of evidence to damn the tonsils as a potent source of disease. In a recent paper by Dr. James Gerret van Zwaluwenburg and Dr. G. P. Grabfield,[4] a plausible case is made out for linking up primary tuberculosis of the tonsils with that form of pulmonary tuberculosis which begins with an apical pleurisy and is later manifested by tuberculous infiltration of the apices of the upper lobes. Their evidence is mainly rontgenological. Rontgenologists are familiar with a shadow at the apex of the lung which is generally interpreted as a sign of localised thickening of the pleura, and is spoken of as a "pleural cap." The main thesis of this paper is to prove that this

[2] Schweiz. med. Woch., May 5th, 1921.
[3] American Review of Tuberculosis, April, 1921.
[4] American Review of Tuberculosis, March, 1921.

"cap" is of tuberculous origin, the result of a downward extension of tuberculosis from the tonsils and through the cervical lymphatics. At the Department of Pathology in the University Hospital of Ann Arbor, Michigan, all the tonsils removed for various reasons were examined for tuberculosis, one section of each tonsil being taken so as to include almost all the crypts. Sixteen persons whose tonsils showed tuberculous foci were subjected to an X ray examination of the chest, and all with but one exception showed a "pleural cap." The X ray examinations of the chests of 27 persons whose extirpated tonsils were found to be free from tuberculosis revealed only three cases of a "pleural cap," and in none of these three did this "cap" amount to more than a relatively fine line without demonstrable evidence of tuberculosis in the underlying lung. To ascertain the frequency of this "pleural cap" in other conditions the 318 chest radiograms taken over a typical three months' period were scrutinised. Unfortunately the figures given in the text do not tally with the corresponding figures given in an adjoining table, but one fact seems to emerge with clearness; in at least 10 per cent. of all the radiograms there were signs of an apical pleuritis as the sole indication of tuberculosis. The authors suggest that the pleura offers a considerable barrier to the further progress of this descending infection, and that the disease is frequently arrested at this point. They have succeeded in demonstrating the quiescence of the denser type of "pleural cap" over a considerable period, and they consider that the denser and the more sharply defined this shadow the more harmless it is. On the other hand, they view with suspicion those "caps" which are lacking in density and which show irregularities on the visceral surfaces, for these features may indicate inadequate cicatrisation and the possibility of propagation of the disease along the connective-tissue elements of the lung. If these views are confirmed by other investigators a definite advance in our knowledge of the ætiology of pulmonary tuberculosis will have been made.

Wildbolz's Auto-Urine Reaction.

Wildbolz's test for active, as distinct from latent, tuberculosis has not of late had a good press. He believed that in the urine of the subjects of active tuberculosis there are specific tuberculous antigens, the existence of which can be demonstrated by the intracutaneous injection of the patient's concentrated urine. The patient himself and any other person with active tuberculosis would, he argued, give a positive reaction, as shown by a small, indurated swelling, whereas no such change would be found if the patient's tuberculosis were no longer in an active stage. But Dr. H. Trenkel,[5] who has subjected the test to a searching examination at Dr. Amrein's sanatorium at Arosa, is very sceptical as to the specificity of the test, and he suspects the so-called positive reaction as being nothing more than a "salt reaction." In six controls—persons whom he had no valid reason for regarding as tuberculous—the reaction was positive, and only in two such controls was it negative. It was also negative in some cases of active tuberculosis. The cogency of his criticism is accentuated by his claim that he has faithfully followed every detail of the test as described by Wildbolz. Dr. R. Offenbacher[6] has investigated this test at the hospital of the Jewish community in Berlin, and, like Dr. Trenkel, he adds force to his criticism by insisting on the strict orthodoxy of his technique. Only in three out of 20 cases of clinically active tuberculosis could he provoke a positive reaction, and he could establish no correlation between the outcome of the test and the condition of the patient. He is, however, less whole-heartedly sceptical than Dr. Trenkel, and he admits that there may be some connexion between the reaction and the activity of the disease. Dr. E. Liebhardt[7] is another critic who blends faint praise with discouraging figures. Working at the communal hospital at Nurnberg, he has experimented with the test in 51 cases, only a proportion of which were tuberculous. His 11 non-tuberculous controls invariably gave a negative reaction, and so far an important substantiation of Wildbolz's claims seems to have been made. But the reaction was also negative in four out of 19 cases of active pulmonary tuberculosis, and in several other cases in this class the reaction was so slight that it would have been missed and labelled "negative," but for a pin's head nodule which was palpable but not visible. Dr. Liebhardt's observations on the subtleties of the test and the interpretation thereof may possibly afford a clue to the conflicting evidence of other workers. Dr. H. Alexander,[8] who is chief medical officer of the Seehof Sanatorium at Davos-Dorf, has subjected Wildbolz's reaction to a varied series of tests. Altogether he has repeated the test 159 times, and among his 91 cases, including several non-tuberculous controls, he found much to confirm Wildbolz's claims. But in as many as 15 cases of definitely active tuberculosis the auto-urine reaction was negative. It was also negative in 12 out of 13 persons showing no clinical evidence of tuberculosis. He is inclined to regard the reaction as specific, and when it is positive he considers the evidence in favour of active tuberculosis to be quite strong. A negative reaction, on the other hand, is, at present, of comparatively little value; and it seems that he could establish no relation between the reaction of the skin to an intracutaneous injection of tuberculin and Wildbolz's reaction. He found the reaction was considerably weaker with urine concentrated by evaporation in an open water-bath than with urine concentrated by evaporation in vacuo. He also never obtained a positive reaction with unconcentrated urine. In its present stage the test can evidently not be relied on, and it seems doubtful whether so complex a substance as urine can be expected to lend itself to such a delicate and discriminating test as that which Wildbolz has devised.

[5] Beitr. z. Klin. d. Tuberk., 1921, xlvii., 219.
[6] Ztschr. f. Tuberk., 1920, xxxii., 335.
[7] Ibid., 1921, xxxiv., 99.
[8] Ibid., 1921, xxxiii., 321.

INDIA.

(FROM OUR OWN CORRESPONDENT.)

INDIGENOUS DRUGS OF INDIA.

SEVERAL debates took place in the Legislative Council of 1918 on the question of Ayurvedic and Unani drugs and the indigenous drugs of India. The speakers pressed for an investigation of these drugs, urging among other things that Ayurvedic and Unani medicines were as efficacious as those of the British Pharmacopœia; that the indigenous systems were cheaper than Western medicine; and that careful investigation would discover a large number of very valuable but hitherto unknown remedies.

Dr. Koman's Reports.

As a result the Madras Government appointed Dr. M. C. Koman, an Indian medical man attached to the Medical College, Madras, to carry out an investigation, and after more than two years work three reports have been published which throw considerable light on the various points raised in the Legislative Council. As a preliminary, visits were paid to Ayurvedic pharmacies and dispensaries, and after collecting the most important drugs and compound preparations, Dr. Koman experimented with these on suitable patients in the wards of the Madras General Hospital. It was quite impossible in the period to investigate more than the therapeutical actions of the medicines, as a well-equipped laboratory and staff would have been required in order to make a pharmacological and toxicological research successful.

Since the time of Ainslie (1826), who first created an impetus for the study of indigenous drugs of India, there has been, Dr. Koman states, a continuous and

increasing interest manifested by the members of the medical profession in India in the investigation of indigenous drugs. Warden and Hooper's work, the reports of the Indigenous Drugs Committee, and the work of Waring, Mohideen Sheriff, W. C. Dutt, and K. L. Dey, prove that all important indigenous medicinal plants have already been investigated, and Dr. Koman adds: "in vain have I attempted to find any drug or medicine whose reputed marvellous properties are shrouded in mystery or have not been already known." In fact, he found, with few exceptions, the practising *vaidyas* and *hakeems* generally unversed and unintelligent, though industrious and well-meaning, and nearly all evinced a firm conviction and belief in the intervention of evil spirits and offered many curious and absurd rules for averting their machinations.

Principles of Ayurvedic Medication.

The properties of drugs are, according to them, correlated to the hypothesis of the three humours, wind, bile and phlegm, which forms the basis of the ætiology, diagnosis, prognosis, and treatment of disease in Hindu medicine. This, as Dr. Koman says, might have formed a working basis in the ancient days of Maharishis, and before Harvey discovered the circulation of the blood, but it cannot hold good against the rational scientific physiology and pathology of the present day. Inquiries regarding specific or general treatment for cases of cerebral apoplexy, locomotor ataxia, the different forms of Bright's disease, cirrhosis of the liver, kala-azar, &c., elicited the fact that these diseases were beyond the scope of successful treatment. There seems, indeed, little if anything for us to learn from the methods of treatment followed by the *vaidyas* and *hakeem*. At the same time Dr. Koman produces figures to prove that the cost of maintaining an Ayurvedic dispensary is much the same as that of maintaining an ordinary dispensary, whilst in addition the Ayurvedic system, with the exception of cataract couching, confines itself to the treatment of medical diseases.

A few drugs proved to be of considerable value, and Dr. Koman recommends that these might be incorporated into the Pharmacopœia of the Presidency hospitals, although a good deal of further work should be done and considerably more experience gained before they can be universally commended. It is also suggested that, as a guide to medical students, the important Indian drugs should be included in the course of lectures on materia medica at the Madras Medical College.

Included in Dr. Koman's list are: (1) *Hydnocarpus inebrians*, a potent drug in ameliorating the complications of leprosy; (2) *Kirmani* (*Artemisia maritima*), a substitute for santonin; (3) *Chempullanhi* (*Colvcopterus floribunda*), an efficacious anthelmintic; (4) *Boerhavia diffusa*, a good diuretic in cases of anasarca, the result of Bright's disease. In a second appendix is given a list of 40 drugs or compounds found to be "useful," but not as effective as medicines already in the B.P. They are given as they are cheaper and more easily obtained than their B.P. equivalents.

Towards an Indian Pharmacopœia.

The Government in reviewing Dr. Koman's reports consider it worth while to continue the experiments with the drugs which have been found to be of value, with a view to their gradual incorporation in the Pharmacopœia of the Presidency Hospitals. There is little doubt, however, that the reports do not meet with the approval of those who asked for the investigation. In spite of Dr. Koman's nationality, they are convinced that his training in Western medicine prejudiced him from the beginning, but all those who are acquainted with the investigator will endorse the compliment paid him by the Government when they thanked him for carrying out a difficult task with uncommon tact, industry, and patience under very unfavourable conditions.

Madras, May 12th.

ROUMANIA.

(FROM OUR OWN CORRESPONDENT.)

Humanitarian Warfare and Bullet Wounds.

Dr. Pafucan recently read a paper at the Medical Union, Bucharest, on bullet wounds in their relation to humanitarian warfare, in which he stated that in the recent war the Serbians and Italians used old-style rifles, which were, however, excellent as regards the safety of the rifle carriers. Their bullets were of larger size and higher velocity than those of the Russians. Moreover, the Russian bullets were pointed, and penetrating wounds caused by them healed very well, whereas the Serbian, Austro-Hungarian, and Montenegrin bullets were very destructive of tissue. No tissues could withstand the impaction or in any way deviate the course of the Russian bullet; the wound is usually so cleanly incised that no pieces of clothing are carried in. The bone is rarely splintered, except in cases where shrapnel is used. The blood-vessels were very often injured, and Dr. Pafucan reported several cases of aneurysm of the popliteal as well as of other arteries. Many of the nerve trunks were attacked. Although these wounds usually healed easily and without reaction, meddlesome examinations were sure to react unfavourably on the course of healing. Pus appeared only in those cases where the tissues around the path of the bullet were invaded. Another complication arose from the frequently large cicatrices and tough adhesions. Out of 496 gunshot wounds there were 27 cranial, 21 being through the substance of the brain. Deep penetrating lesions in this region were not accompanied by any destruction of the bones of the skull; the latter was observed only in the superficial wounds. Six of the cases were accompanied by paralysis of the arm and leg; two presented the symptoms of cortical epilepsy evidently due to pressure and removed by operation. The general results of wounds of the lungs were rather favourable, all of them, with two exceptions, being penetrating. There was hæmoptysis in 22, subcutaneous emphysema in four, and extensive hæmothorax in one. Dr. Pafucan had observed 43 cases of abdominal trauma, all of which were penetrating wounds; of these only five died, chiefly owing to neglect of treatment; one death was caused by peritonitis. There were several penetrating wounds of the liver, spleen, and kidneys.

Disorders of the Heart in Adolescents.

Dr. Goldenberg, chief medical inspector of the Middle Schools, has written a small pamphlet on the above subject, in which he states that he has found comparative hypertrophy of the artery walls not uncommon in older children and at puberty, but the accompanying blood pressure is not materially increased, although there may be palpitations and a sense of oppression in the chest. The cause is a "growth hypertrophy," as a rule, although masturbation has been accused of the results. Lack of dilatation of the heart, lack of murmurs, normal size of the liver, good health otherwise, and absence of aggravation of the symptoms by physical exercise, render an organic lesion improbable. Children are particularly prone to arrhythmia, brought on by the slightest causes; the harmless arrhythmia is distinguished by the full and powerful pulse beat, the diastole alone varying in length. This form of arrhythmia also subsides if the heart action becomes accelerated, as the abnormally long diastoles are then shortened. This infantile type of harmless arrhythmia may persist beyond puberty, and give grounds for alarm if casually discovered first in a young pregnant woman. Arrhythmia due to actual organic disease is generally the result of extra-systoles: the latter may be accepted as suspicious of a genuine organic heart lesion; but they may also occur solely from some nervous affection, and may even be the first

manifestation of an organic nervous disease. No one, according to Dr. Goldenberg, has yet succeeded in inducing extra-systoles by irritation of the heart nerves. The arrhythmia in tuberculous meningitis is of the infantile type—that is, it seems to be due exclusively to diastoles of various length. He maintains that heart murmurs may also be observed without organic lesions. Lüthje found systolic murmurs in 623 out of 857 children examined, but only 2 per cent. of the total number had certain signs of valvular disease. Beyer detected a systolic murmur in 352 out of 830 school children examined (more frequently in girls). In 253 cases the murmur was audible during repose; in the others, only after gymnastic exercises, and only in 14 cases were concomitant signs of a heart defect to be detected. Dr. Goldenberg explains these accidental murmurs as due merely to certain physiological and anatomical peculiarities of the circulation in children, differing possibly in various cases, such as more rapid flow of blood in the anæmic, or a slight and transient muscular mitral insufficiency.

Colony for Sane Epileptics.

The city council of Czernovitz has received the report of a deputation appointed to visit foreign, and particularly English, colonies for sane epileptics, in view of the projected colony to be started by the Bukovina province, of which Czernovitz is the capital. The deputation recommended as the most economical plan that the accommodation should be of the colony type, with villas to hold 15 to 20 patients. Central administrative buildings would also be required, as the colony would admit patients from the whole of Roumania, and the deputation recommended the erection of large workshops, so that continuous employment might be provided in bad weather when the patients could not be employed out of doors at farm and garden work. It is considered that constant work is the best thing for warding off attacks and conducing to a contented and peaceful state of mind. Though many epileptics are bad workers, the report states that proper personal supervision of their individual wants gives better working results. It is estimated that the number of epileptics for whom accommodation would be required is about 200.

The "Single-Child" System in Transylvania.

The Child Study Society of Transylvania has collected much data relating to the "single-child" system, which prevails chiefly in the Banat (the south-western part of Transylvania); their report states that until recently it had been thought that the system was thought to be purely a question of economics. People did not wish to distribute their lands and wealth between several children, but the custom had now become independent of land questions. It was quite clear that the "single-child" family did become not richer but poorer. The "single-child" generation tended to grow up idle and self-indulgent. If they were landed proprietors their farms were worked by others, necessitating payment of heavy wages. Farmers began to understand that the single-child system meant their ruin, but the custom was deeply rooted and the people were very conservative. People who had several children were actually despised. Another reason for the single-child system was feminine vanity: women thought that by avoiding childbirth they would remain young and enjoy life for a longer time. The spread of the system was aided by midwives and quacks, and, unfortunately, by doctors also; it was further promoted by unprincipled dealers in preventives, and by offensive advertisements in the press. The only child was spoilt by his parents, and too often entered early into a career of dissipation, the result being rapid physical and mental deterioration. The report points out that such a system must ultimately ruin the whole people.

Bucharest, June 9th.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

A Medical Strike.

ON the last day of May occurred an incident which a short time ago would have seemed impossible. All doctors in Vienna and Lower Austria, numbering about 4800 (out of 6600 in the whole Austrian Republic), declared a strike lasting from 10 A.M. to 4 P.M. as a demonstration against the attitude of the Government, which is regarded as injurious to the interests of the profession. It was pointed out in a previous letter (THE LANCET, May 14th, p. 1043) that serious dissatisfaction prevailed in medical circles in regard to the recent acts of legislation, and that the relations between the profession as a whole and the authorities of the State were very strained. The new "Dentists Act," which gives to non-medical men the permission to do medical, or rather surgical, work on patients, finally brought the problem to a crisis. The Medical Council, together with the Economic Organisation, at once arranged for a demonstration which should indicate that the patience of the profession had been overtaxed. In spite of adverse criticism, especially amongst physicians of the older type, it was decided to stop all kind of medical work. A strike was ordered, and all private doctors, as well as the men working in the hospitals and charitable institutions in the city and district named, obeyed the order. Care was, of course, taken that pressing cases were not left without help, but on that day all other kind of medical work was brought to a standstill during the time mentioned above. At the same time a mass meeting of all the doctors on strike was convened, and the presidents of the medical representative bodies were able to point out, amidst a scene of enthusiasm, that for the first time in the history of the profession in Austria it had become possible to unite all medical men without exception against interference with their vital interests. The meeting carried unanimously resolutions, of which the following are abstracts:—

1. The medical profession protests most energetically against the present attitude of the authorities and legislative bodies in all problems of hygiene and public health. It demands that the medical corporations be acquainted with all measures of an economical or political nature affecting the interests of the profession before such measures are settled by Parliament, and expects the same treatment in this respect as that at present enjoyed by members of other callings.

2. A supreme health council shall be created, on which representatives of the profession are to hold a consulting interest, and this must be constructed in such a way that the majority of the members are practitioners and scientists holding a medical degree.

3. The present method of sickness insurance shall be replaced by a modern organisation ensuring a maximum of benefit both to the insured population and to the doctors working under the scheme; the economic interests of both parties to be cared for by a committee working under direct control of the Ministry responsible for social administration.

4. The profession demands an independent Ministry of Public Health, whose head shall be a doctor of medicine, and must be on equal footing with the other Ministers.

5. A new Health Act shall be brought at once before the legislative bodies; in order to begin with real sanitation of the country, the latest achievements of hygiene and public health must be embodied in it, and every law must, before passing the National Assembly, be referred to the Supreme Council of Health. The responsibility of all State officials for damage to individual health caused by their action or decision should be stated in this Act. Furthermore, the Act should expressly state that only duly qualified persons are permitted to practise on the human body and treat it in conditions of disease, such permission being subsequent to at least two years' service in a hospital.

6. Old age and sickness insurance shall be made compulsory for all practitioners; a reform of the medical curriculum, combined with post-graduate lectures free of charge, but compulsory after a lapse of years, are earnestly demanded.

The profession also desires convincing proof of compliance on the part of the Government with the

demands framed in these six points. Medical men have often and too long been put off by promises, and they have now made up their minds to see their demands fulfilled. Unless the Government binds itself within four weeks to acknowledge the necessity of meeting these points, the entire profession will take up the fight and, if forced to do so, will stop all medical work. It is with the utmost reluctance that the leaders of the medical organisations have recommended such a step, but in this country it seems that only drastic measures can produce an effect on the mentality of members of the Government.

Proposed Health Certificate for Marriage.

The Vienna Board of Health has taken an important step in the direction of promoting control of public health by instituting three committees, each consisting of three fully qualified scientists, to draw up definite suggestions as to the issue of a health certificate to all parties intending to marry. The chief instigator of the procedure is Prof. Tandler, the former Under-Secretary of State for Health, and now head of the Office of Health in Vienna. He asserts that there are three groups of diseases which he intends to combat: sexual diseases, tuberculosis, and degenerative diseases in persons of tainted family. Every person must produce before marriage a certificate showing that he or she is not prone to one of the above-mentioned group, and the examination should be conducted in a thorough, but humane way. Professional secrecy would, of course, be guarded in a most strict manner, but the other party to the engagement would, naturally, be entitled to obtain full knowledge of the reasons for refusal of the permit to marry. Prof. Tandler believes that the setting up of committees will prompt many negligent patients to apply for treatment, and approach very nearly to the ideal condition of compulsion in respect of sexual disease. Refusal of a marriage permit could be withdrawn after appropriate treatment had been administered. The right of the community to control the health of its members is unquestionable, since it is entitled to send them to death on the battlefield. At present the number of persons suffering from tuberculosis is increasing steadily, and the morbidity from syphilis and gonorrhœa is alarmingly high, especially in the towns; indifference to the fate of the coming generation is therefore nothing less than a crime. The proposed "celibacy of the diseased" must not, of course, be restricted to poor people only, for it is just the wealthier classes of the population who could evade such a disagreeable condition of legislation, unless due precaution be taken. As is to be seen from these leading points, the main idea behind the suggestion of a health certificate for those about to marry is control of the health of children. Such a certificate would naturally only interfere with the legitimate descendants; illegitimate children could not be protected by it. But partial prophylaxis is better than none at all.

June 10th.

THE LATE DR. CHARLES E. CAMPBELL-HORSFALL.—The death is announced of Dr. Charles Campbell-Horsfall at Newquay. Dr. Campbell-Horsfall was the youngest son of the late Dr. Henry Horsfal; born at Masham, Yorkshire, in 1877, he was educated at Christ's Hospital, Trinity College, Harrogate, Yorkshire College, and Victoria University, becoming house physician at Leeds Infirmary, and house surgeon of Leeds Women's and Children's Hospital in 1899. He married, in 1901, Lilias Marianne, daughter of the late Robert Hume Campbell, of Glenclarnel. In 1901 he settled at Clevedon, Somerset, where his good work was such that when he resolved to leave the neighbourhood and seek a wider sphere a very largely signed petition was presented to him by the residents requesting him to reconsider his decision. He then entered practice at Newquay, where he secured a wide circle of friends and patients by kindness and ability. He sought recreation in field sports, with the whole-heartedness that characterised the discharge of his professional duties, and it was beside a moorland trout stream that he contracted the chill which finally proved fatal.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Irish Hospitals.

THE report of the Board of Superintendence of the Dublin hospitals reveals their serious financial position. Only one of these institutions, the Westmorland Lock Hospital, has in the past year been able to keep its expenditure within its income. All the others, in spite of every economy in management, are weighed down by overdrafts. The report makes clear once again that the hospitals cannot continue to exist unless some new source of revenue is found. On the same day that the report of the Board was made public it was also announced that the Irish hospitals were not to share in the grant of half a million which the Government has promised to provide to meet urgent necessities. The omission with be felt in Ireland, where the hospitals owe their financial difficulties to the abnormal economic conditions of the past few years, just as much as the institutions in other parts of the kingdom do. These economic conditions have pressed especially hardly on Dublin, for business people and manufacturers in Ireland, outside Belfast did not share in the various war industries. Moreover, no part of the kingdom contributed so much to Red Cross Funds, in proportion to its wealth, as Ireland, and in none, therefore, did the hospitals suffer more from competition with claims for Red Cross purposes. On the other hand, the hospitality of the Irish hospitals to sick and wounded soldiers was given and accepted as freely as that of the hospitals elsewhere. It is not to be expected that those interested in the health of Ireland will assent calmly to the exclusion proposed by the Minister of Health.

Dublin Milk.

The Local Government Board has just issued a report on the milk of Dublin, based on investigations conducted by the bacteriologist to the Board, Dr. J. W. Bigger. He describes a serious state of affairs. Of the specimens of milk examined, taken at random from the milk sold in the city, no less than 8 per cent. contained tubercle bacilli. Dr. Bigger comments on the dirty condition of much of the milk, and states that those who supply and sell dirty milk to the children of Dublin are responsible for the deaths of hundreds each year. As a matter of fact, if the regulations in force in New York were applied in Dublin, 77 per cent. of the milk now being sold in Dublin would be condemned as being unfit for human food. Dr. Bigger urges that those who sell dirty milk should be fined, imprisoned, or prohibited from selling milk. At present, offenders who are convicted of diluting or skimming milk are usually treated with the utmost leniency, while prosecutions are not brought for selling dirty milk.

Sir Stewart Woodhouse, M.D. Dub., F.R.C.P. Irel.

To the great regret of a large circle of friends, the death has been learnt of Sir Stewart Woodhouse at the age of 75. Educated at Trinity College, Dublin, where he had a distinguished course in arts, obtaining high honours in both classics and philosophy, Stewart Woodhouse proceeded to medicine, graduating in 1872. Two years later he became a Fellow of the Royal College of Surgeons in Ireland, though he resigned this degree on becoming a Fellow of the Royal College of Physicians. In his early professional days he was lecturer in pathology in the Carmichael School of Medicine, and assistant physician to the House of Industry Hospitals, while he was engaged in practice as a physician. He resigned these appointments and abandoned his practice in 1880 to become a medical inspector of the Local Government Board. Ten years later he was appointed medical member of the General Prisons Board, and some 15 years ago he received the honour of knighthood. During his whole career

as a public servant he maintained a high standard of duty, while showing kindness and consideration to his subordinates. In private life he was an unassuming and attractive companion and a man of wide reading.

Sir John Walton Browne, D.L.

At the investiture held by His Majesty the King during his recent visit to Belfast the honour of knighthood was conferred upon Dr. John Walton Browne, D.L. He is one of the oldest and most popular members of the medical profession in Ulster, and has given valuable services in many capacities. He is consulting surgeon to the Royal Victoria Hospital, and surgeon to the Belfast Ophthalmic Hospital. His new honour has given much satisfaction to his many friends both in the profession and among the general public.

Dr. S. B. Boyd Campbell has been elected assistant physician to the Royal Victoria Hospital, Belfast, in succession to Dr. J. E. MacIlwaine, who has become staff physician.

Colonel Professor Thomas Sinclair, C.B., F.R.C.S., has been elected a member of the Senate of the Parliament of Northern Ireland.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.

THE eightieth annual meeting of this Association will be held from July 11th to 15th, under the presidency of Dr. C. Hubert Bond, in the Barnes Hall of the Royal Society of Medicine, Wimpole-street, London, W. On June 11th meetings of the Educational and Parliamentary Committees will be held. On July 12th, at 10.30 A.M., the meeting will proceed to elect officers of the Association for the year 1921–22, and reports of the council, officers, and standing committees will be read. The nominee for the Third Maudsley Lecture will be Sir Maurice Craig. At 11.30 A.M. a paper will be read by Dr. P. W. Bedford, entitled "The Goldsol Test in Mental Disease." At 3 P.M. Dr. C. H. Bond will deliver his presidential address on the Position of Psychological Medicine in the Medical and Allied Services. At 4.30 P.M. Dr. Edwin Goodall will give a demonstration of X Ray Photography of Barium Meals in cases of Dementia Præcox; and, jointly with Dr. H. A. Scholberg, a note on the Diastase-Contents of the Urine in 120 Cases of Mental Disorder. On July 13th, at 10 A.M., the following papers will be read: The Oxford Clinic, by Dr. T. S. Good; Psychological Medicine in Relation to Industry, by Dr. C. S. Myers, F.R.S.; and the Problem of Prevention in the War Psychoses, by Dr. Bernard Hart. At 2.30 P.M. the following papers will be read: Legislative Restrictions in Connexion with the Treatment of Incipient Insanity, by Dr. Wilfred Caroleu, secretary of the Royal Academy of Medicine, Barcelona; Mental Defect and the School Medical Service, by Dr. George A. Auden; Expatiation Mechanism in a Case of Schizophrenia, by Dr. Henry Devine. On July 14th, at 10 A.M., Dr. W. Ford Robertson will read a paper on Chronic Bacterial Infections in Dementia Præcox, to be followed by a communication on Change of Phase in the Psychoses, by Dr. Thomas Beaton, and one on Recurrent Phantasies of Infancy and Childhood as a Source of Delusions, by Dr. Edward Mapother. At 3 P.M. the members will assemble at the Springfield Mental Hospital, Tooting, London, S.W., where a paper will be read by Dr. Henri Colin, of Paris, entitled "Mental Hygiene and Prophylaxy." At 4 P.M. the subcommittee of the Springfield Mental Hospital kindly invite members of the Association and friends to a garden party to be held in the grounds of the hospital. On July 15th, at 10 A.M., at the Royal Society of Medicine, Dr. J. T. Dunstan will speak on the Feeble-minded Problem in South Africa and Dr. William Brown on Psychology and Psychotherapy. In the afternoon members and friends are invited by the London Asylums Mental Deficiency Committee to visit the mental hospitals on their estate at Epsom. The annual dinner of the Association will be held at the Connaught Rooms, Great Queen-street, London, W.C., on Wednesday, July 13th, at 7.30 P.M. Members desiring to attend are asked to send 30s. (the inclusive cost) as early as possible to the general secretary (Dr. R. Worth), Springfield Mental Hospital, near Tooting, London, S.W. 17.

THE third annual meeting of the Mental Hospitals Association will be held in the Guildhall, E.C., to-day, Friday, July 1st, at 11.30 A.M.

Public Health Services.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

Brighton.

IN the annual report for 1920 of the medical officer of health for Brighton (Dr. D. Forbes) the estimated population is given as 137,685. The net births were 3087, the highest recorded number since 1884, giving a birth-rate of 22·28. The death-rate was 12·42 and the infant mortality-rate 67, both being the lowest ever recorded. There were 141 deaths from pulmonary tubercle, giving a death-rate of 1·1 per 1000. Of the 306 new cases of pulmonary tubercle notified, 69 were imported cases. The number of new houses erected during the years 1914, 1915, 1916, 1917, 1918, 1919, and 1920 were 44, 22, 9, 1, 5, 0, and 30 respectively. Of the 30 new houses erected in 1920, 14 were built by the corporation. In addition to the public abattoir there are 18 private slaughter-houses. "It would be of great benefit to the town if all the private slaughter-houses were abolished." The slaughtering for Hove is done in Brighton. Of 303 samples of wholesale milks 5 per cent. were non-genuine and of 105 samples of retail milks 10 per cent. were non-genuine. The average milk fat in the wholesale samples was 3·41 per cent. and in the retail samples 3·42 per cent. Of 19 samples of "pure cream" purchased under the Milk and Cream Regulations, five were found to contain preservatives. Dr. Forbes recommends that the State should supply vaccines and sera, in order that there may be a guarantee as to potency and reliability. The hospital records as to "return" cases of scarlet fever are given for 11 years and show that the percentage of discharges followed by return cases after one month, three months, and a year are 2·4, 3·1, and 3·7 respectively. "It is a good rule to exclude discharged patients from school for a period of four weeks." "The most important dangerous conditions are sores about the nose and nasal discharge. No notice need be taken of desquamation, red throats, enlarged tonsils, or moist noses without actual discharge." Since 1910 the removal of bedding for steam disinfection after scarlet fever and diphtheria has been given up. Bedclothes and personal clothing are washed at home. The rooms are sprayed with formalin. Mattresses, bolsters, and palliasses are not disinfected. The change has apparently done no harm, and Dr. Forbes thinks the disinfection of bedding after these diseases as usually carried out is "useless and a waste of public money." The corporation pay £300 a year to the Queen's Nurses for the home nursing of consumptives, and the nurses receive tuition from the tuberculosis officer. "One of the most pressing wants of the consumptive is the provision of light work which he can take up or drop as his condition allows. Few employers could afford to engage men on such conditions, and it would seem necessarily to fall to the local authorities to provide open-air workshops with canteens and club rooms for consumptives. The advantages are too obvious to require enumeration." Lectures have been arranged for the parents of school children on sex hygiene, afternoon lectures for mothers, and evening lectures for fathers, and were well attended. 671 new cases of venereal disease were treated at the V.D. clinic at the Royal Sussex County Hospital during the year. The 21 midwives in private practice sent for medical help in 173 cases, and £171 9s. was paid by the corporation to doctors called in in respect of 90 cases. Ante-natal work is chiefly done at the West-street Lying-in Hospital. Private midwives are invited to send patients, but very few avail themselves of the assistance offered. The work of the dental clinic for mothers and children makes slow progress. Thirty-one mothers and nine children had treatment during 1920. The number of ophthalmia

neonatorum cases notified was 29. Four of the most severe cases were treated in the sanatorium. "Ulceration of the cornea occurred in one case only, this cleared up completely under treatment." The following scheme of precautions has been drawn up for the use of the midwives:—

1. Directly the head of the infant is born wipe each eye with clean cotton-wool. Use a fresh piece for each eye; burn it after use.

2. As soon as the child is separated, wash the child's eyelids with a warm boracic lotion.

3. When first bathing the child use fresh water and a clean towel for the face and allow no bath water to enter the eyes. After the bath open each eye and thoroughly wash out with a warm boracic lotion—a thorough irrigation. This is most important.

4. Then open the eyes again and drop into each eye one drop of argyrol (10 per cent. strength). Drops of argyrol must on no account be continued after the first day except they are ordered by a doctor.

5. Continue ablution as stated in (3) daily during attendance.

6. At no time during the lying-in period use the mother's sponges, napkins, towels, &c., for the child.

A ward at the sanatorium is set aside for infants suffering from malnutrition, mostly for those attending the infant welfare centres who fail to improve. Dr. Forbes's report gives full particulars of the work of the school medical department. He draws attention to the increasing interest of the parents in this work, and expresses his warm appreciation of the helpful and enthusiastic assistance given by the teachers.

Huddersfield.

The annual report for 1919 of the medical officer of health for Huddersfield consists of the usual tables and a short introductory letter, in which Dr. S. G. Moore tells us that "in accordance with instructions it (the report) contains essential facts only." The Registrar-General's estimate of the population is, for birth-rate 118,036 and for death-rate 105,346. Dr. Moore is of opinion that the establishment of "British Dyes" has caused exceptional immigration and that the population was over 120,000. Even if he is correct, the error in the rates would not be a very great one. The death-rate for 1919 was 15·81 and the infant mortality rate 95. The birth-rate was only 12·66 and for the second year in succession there have been more deaths than births in Huddersfield. In 1918 the births were 1575 and the deaths 1737, and in 1919 the births numbered 1519 and the deaths 1701. No wonder Dr. Moore writes: "The least satisfactory feature of the vital statistics of the borough is presented by the birth-rate." During the influenza year (1918) half the 45 largest towns had death-rates higher than their birth-rates, but during 1919 the only towns which kept Huddersfield company in this respect were textile mill towns—namely, Blackburn, Bradford, Halifax, and Oldham. At the end of 1919 came the revival of the birth-rate, and in 1920 none of the 45 towns had a death-rate higher than the birth-rate, in Huddersfield the death-rate being about 13·0 in comparison with a birth-rate of about 18·0. Dr. Moore records that the system of voluntary notification of pregnancy, begun in 1916, "continues to confer benefits upon paido-poietics, both substantial in character and to a considerable extent. .... The work proceeds smoothly and agreeably to all concerned." During 1919 34 per cent. of the pregnancies were notified. We must enter a gentle protest against the introduction of the dreadful word "paido-poietics" to denote the expectant mother. It may be a little illogical to call a woman pregnant for the first time a "mother," even when qualified by the epithet "expectant," but the Greeks used Dr. Moore's term equally of begetting and conception.

Barnstaple.

In the health report for 1920 of the borough of Barnstaple the estimated population is given as 14,270. There were 364 births in 1920 and 238 in 1919. The death-rate in 1920 was 13·7 and the infant mortality rate 43·9. Dr. H. C. Jonas submits a very complete report of the work of the health and school medical departments. The main industries of the town are lace manufacture, cabinet-making, gloving, agriculture, and (recently) shipbuilding. The tuberculosis death-rate appears high, 2·3 for 1920 and 1·6 for 1919. Among the matters reported as needing attention are the substitution of "proper covered ashbins for the filthy boxes which are still far too common," and the provision of public baths and school baths. Satisfactory arrangements have been made for the treatment of the school children. A school dentist began work in April and is "pleased with the results so far obtained," but reports some reluctance to accept treatment both in the school work and at the maternity clinic. The school nurse also acts as health visitor and thus overlapping is avoided. Of three schools reported in 1919 as unsatisfactory, two have been renovated and the worst has been closed, army huts having been put up to provide the necessary accommodation. Dr. Jonas reports that the converted army huts make good and airy class-rooms. Progress with the council's housing scheme has been slow. The sites for 200 houses have been bought and laid out. In the meantime an unhealthy area including 40 houses cannot be dealt with. There is also great difficulty in getting repairs done so as to keep existing houses fit for habitation. The owners say they cannot do the repairs, and owing to the shortage the council does not want any houses closed. This would seem to be a case where the local authority should do the repairs and recover the cost from the owners.

SCHOOL MEDICAL SERVICE.

Rutland County Council.—In his annual report for 1920 Dr. C. Rolleston complains of the want of coöperation between the public health and education authorities, and that "within no distant period there will be two sets of officials visiting each home in the county, one on account of infant welfare, the other for the well-being of the school child." Nursing assistance is needed both for the ophthalmic surgeon and the dentist. The total number of entrants, intermediates, and leavers examined during the year was 731. Parents attended 84 per cent. of the examinations. There is a good deal of parental opposition to the treatment of teeth and of tonsils and adenoids. The percentage of clean children was 84·9, of normally nourished children was 94, and 100 of the 731 examined were found to be in urgent need of dental treatment. During 14 months the school dentist inspected 1515 children, of whom 1303 (85 per cent.) were referred for treatment and 912 (69·9 per cent.) actually treated. Dr. Rolleston does not think the amount of dental caries is worse in Rutland than elsewhere, and instances Hull children with 85 per cent. and Sunderland with 94·5 per cent. of caries. He also compares the 70 per cent. accepting treatment with the 48 per cent. of Leeds and the 49 per cent. of Stoke-on-Trent. The parent of a child with 11 carious teeth wrote to the school dentist, "He can eat and drink more than enough, and that's all I want him to do." And another parent, "I am not going to have him messed about just to please you." The arrangements for treating tonsils and adenoids are not satisfactory, and Dr. Rolleston recommends his committee to come to an agreement with Oakham Cottage Hospital and Stamford Infirmary. Dr. Rolleston records the gradual extinction of ringworm in Rutland "which has been brought about by the application of X rays to all cases irrespective of the extent of the disease." Under the heading "Sanitary Conditions," Dr. Rolleston comments on dirty towels and lavatories, the unsatisfactory water-supply of the majority of the schools and the continued existence of "privy vaults," and puts in a plea for more playground classes.

VITAL STATISTICS OF LONDON DURING MAY, 1921.

IN the accompanying table will be found summarised statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious diseases it appears that the number of persons reported to be suffering from one or other of the ten diseases notified in the table was equal to an annual rate of 9·6 per 1000 of the population, estimated at 4,531,971 persons in the middle of 1920; in the three preceding months the rates had been 10·2, 9·7, and 8·7 per 1000. Among the metropolitan boroughs the lowest rates from these diseases were recorded in Fulham, Chelsea, the City of Westminster, St. Pancras, Lambeth, and Lewisham; and the highest in Hammersmith, Stoke Newington, Hackney, Shoreditch, Bethnal Green, and Stepney. The prevalence of enteric fever was somewhat greater than in the preceding month; of the 23 cases notified during the four weeks ended May 28th, 3 cases belonged to each of the boroughs of Stepney, Wandsworth, and Woolwich, and 2 each to St. Pancras, Hackney, and Poplar. There were 18 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 9, 10, and 10 at the end of the three preceding months; the weekly admissions averaged 5, against 2, 3, and 2 in the three preceding months. The prevalence of scarlet fever was 20 per cent. greater than in the preceding month; this disease was proportionally most prevalent in Hammersmith, Stoke Newington, Hackney, the City of London, Bethnal Green, and Stepney. The Metropolitan Asylums Hospitals contained 3375 scarlet fever patients at the end of the month, against 3799, 3487, and 3217 at the end of the three preceding months; the weekly admissions averaged 507, against 464, 469, and 411 in the three preceding months. The prevalence of diphtheria was somewhat less than in April, and was lower than in any preceding month since August of last year; the greatest proportional prevalence of this disease was recorded in Hampstead, Hackney, Holborn, Finsbury, Shoreditch, and Bethnal Green. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 2766, 2652, and 2429 at the end of the three preceding months, numbered 2121 at the end of May; the weekly admissions averaged 241, against 333, 290, and 261 in the three preceding months. Erysipelas was proportionally most prevalent in Kensington, St. Marylebone, Shoreditch, Southwark, Deptford, and Greenwich. Eighteen cases of encephalitis lethargica were notified during the month, against 77, 56, 24, and 14 in the four preceding months; of these, 3 belonged to Stepney, 3 to Camberwell, 2 to Hammersmith, and 2 to Wandsworth. The cases of cerebro-spinal fever numbered 11, against 17, 14, and 12 in the three preceding months; of these, 4 were notified from Wandsworth, 2 from Poplar, and 2 from Lambeth. The 32 cases of puerperal fever included 7 in Islington and 4 in Hackney. The mortality statistics in the table relate to the deaths of civilians actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the four weeks ended May 28th the deaths of 3879 London residents were registered, equal to an annual rate of 11·2 per 1000; in the three preceding months the rates had been 14·0, 13·6, and 12·6 per 1000. The death-rates ranged from 8·2 in Lewisham, 9·2 in Holborn, 9·5 in Hampstead, 9·8 in Woolwich, 10·0 in Deptford, and 10·1 in Bermondsey, to 12·8 in St. Marylebone, 13·0 in Finsbury, 13·2 in Kensington and in Chelsea, 13·5 in the City of London, and 15·2 in Shoreditch. The 3879 deaths from all causes included 213 which were referred to the principal infectious diseases; of these one resulted from enteric fever, 16 from measles, 22 from scarlet fever, 46 from whooping-cough, 77 from diphtheria, and 51 from diarrhœa and enteritis among children under 2 years of age. No death from any of these diseases was recorded in Chelsea or in the City of London. Among the metropolitan boroughs the lowest death-rates from these diseases were recorded in the City of Westminster, St. Marylebone, Stoke Newington, Holborn, Southwark, Lambeth, and Greenwich; and the highest in Paddington, Hampstead, Finsbury, Shoreditch, Stepney, and Deptford. The fatal case of enteric fever belonged to Wandsworth; the average number of deaths from this disease in the corresponding period of the five preceding years was 5. The 16 deaths from measles were less than one-eighth of the

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING MAY, 1921.

(*Specially compiled for* THE LANCET.)

CITIES AND BOROUGHS.	Estimated civil population, 1920.	Notified Cases of Infectious Disease.												Deaths from Principal Infectious Diseases.								Deaths from all causes.	Death-rate per 1000 living.
		Enteric fever.	Other continued fevers.	Small-pox.	Scarlet fever.	Diphtheria.*	Erysipelas.	Poliomyelitis and polioencephalitis.	Encephalitis lethargica.	Cerebro-spinal fever.	Puerperal fever.	Total.	Annual rate per 1000 persons living.	Enteric fever.	Small-pox.	Measles.	Scarlet fever.	Whooping-cough.	Diphtheria.*	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.		
LONDON	**4,531,971**	**23**	—	—	**2079**	**996**	**170**	**6**	**18**	**11**	**32**	**3335**	**9·6**	1	—	**16**	**22**	**46**	**77**	**51**	**213**	**0·6**	**3879**	**11·2**
West:																								
Paddington	149,673	—	—	—	64	25	—	—	—	—	1	90	7·8	—	—	1	1	2	1	5	10	0·9	127	11·1
Kensington	164,177	1	—	—	58	25	11	—	1	—	—	96	7·6	—	—	—	1	1	1	4	7	0·6	166	13·2
Hammersmith	136,200	—	—	—	89	36	2	—	2	—	—	129	12·3	—	—	—	2	1	1	3	7	0·7	118	11·3
Fulham	158,621	1	—	—	52	27	5	1	1	—	1	88	7·2	—	—	—	2	3	2	1	8	0·7	126	10·4
Chelsea	62,987	—	—	—	29	4	1	—	1	—	—	35	7·2	—	—	—	—	—	—	—	—	—	64	13·2
CityofWestmin'r	132,615	—	—	—	42	26	3	—	—	—	—	71	7·0	—	—	—	—	—	3	—	3	0·3	119	11·7
North:																								
St. Marylebone	101,856	1	—	—	36	15	7	—	—	—	1	60	7·7	—	—	—	—	—	1	—	1	0·1	100	12·8
Hampstead	91,519	—	—	—	20	33	2	—	—	—	—	55	7·8	—	—	—	—	1	4	1	6	0·9	67	9·5
St. Pancras	228,178	2	—	—	84	36	6	1	—	—	2	131	7·5	—	—	—	1	3	2	2	8	0·5	182	10·4
Islington	335,907	—	—	—	155	86	16	1	1	—	7	266	10·3	—	—	—	2	4	8	5	19	0·7	293	11·4
Stoke Newington	52,984	—	—	—	41	7	—	—	—	—	1	49	12·1	—	—	—	—	—	—	1	1	0·2	43	10·6
Hackney	225,372	2	—	—	160	71	8	—	—	—	4	245	14·2	—	—	—	1	2	6	1	10	0·6	189	10·9
Central:																								
Holborn	39,676	1	—	—	17	15	—	—	—	1	—	34	11·2	—	—	—	—	—	1	—	1	0·3	28	9·2
Finsbury	78,291	—	—	—	33	26	3	—	—	—	—	62	10·3	—	—	—	1	—	4	1	6	1·0	78	13·0
City of London	14,447	—	—	—	9	—	—	—	—	—	—	9	8·1	—	—	—	—	—	—	—	—	—	15	13·5
East:																								
Shoreditch	102,044	—	—	—	55	58	8	—	—	—	—	121	15·5	—	—	5	1	3	4	3	16	2·0	119	15·2
Bethnal Green	114,471	—	—	—	71	48	6	—	—	—	—	125	14·2	—	—	1	—	—	4	—	5	0·6	98	11·2
Stepney	241,770	3	—	—	149	61	12	1	3	1	2	232	12·5	—	—	5	3	3	5	6	22	1·2	217	11·7
Poplar	159,766	2	—	—	94	42	4	—	1	2	1	146	11·9	—	—	1	—	1	1	3	6	0·5	129	10·5
South:																								
Southwark	187,142	—	—	—	83	28	15	—	1	1	2	130	9·1	—	—	—	—	2	—	1	3	0·2	162	11·3
Bermondsey	129,189	—	—	—	79	17	3	—	—	—	1	100	10·1	—	—	—	1	—	1	2	4	0·4	100	10·1
Lambeth	293,572	1	—	—	90	30	4	—	—	2	2	129	5·7	—	—	2	—	3	—	1	6	0·3	274	12·2
Battersea	165,664	1	—	—	68	41	4	—	—	—	1	115	9·0	—	—	—	—	6	3	1	10	0·8	136	10·7
Wandsworth	346,990	3	—	—	129	80	12	1	2	4	—	231	8·7	1	—	—	3	5	6	—	15	0·6	285	10·7
Camberwell	284,712	1	—	—	127	52	9	1	3	—	1	194	8·9	—	—	—	1	—	5	7	13	0·6	248	11·4
Deptford	115,636	1	—	—	60	27	8	—	—	—	2	98	11·0	—	—	—	—	2	5	2	9	1·0	89	10·0
Greenwich	102,408	—	—	—	50	17	7	—	—	—	—	74	9·4	—	—	1	—	1	—	—	2	0·3	91	11·6
Lewisham	174,438	—	—	—	65	24	9	—	1	—	1	100	7·5	—	—	—	—	1	5	1	7	0·5	110	8·2
Woolwich	141,666	3	—	—	70	39	5	—	1	—	2	120	11·0	—	—	—	2	2	4	—	8	0·7	106	9·8

* Including membranous croup.

average; of these, 5 belonged to Shoreditch, 5 to Stepney, and 2 to Lambeth. The 22 fatal cases of scarlet fever exceeded the average by 13; of these, 3 belonged to Stepney, 3 to Wandsworth, and 2 each to Hammersmith, Fulham, Islington, and Woolwich. The 46 deaths from whooping-cough were about half the average number; this disease was proportionally most fatal in Fulham, Holborn, Battersea, Wandsworth, Deptford, and Woolwich. The 77 fatal cases of diphtheria were 33 in excess of the average; the greatest proportional mortality from this disease occurred in Hampstead, Finsbury, Shoreditch, Bethnal Green, and Deptford. The 51 deaths from infantile diarrhœa were 2 below the average; this disease was proportionally most fatal in Paddington, Kensington, Shoreditch, Stepney, and Camberwell. In conclusion, it may be stated that the aggregate mortality in London during May from these principal infectious diseases was 37 per cent. below the average in the corresponding period of the five preceding years.

The Services.

ARMY MEDICAL SERVICE.

Temp. Hon. Col. C. J. Bond relinquishes his commn. and retains the hon. rank of Col.

ROYAL ARMY MEDICAL CORPS.

Lt.-Cols. H. W. H. O'Reilly and C. A. Stone are placed on ret. pay.

Temp. Capts. J. P. Bonfield and C. F. Simpson relinquish their commns. and retain the rank of Capt.

ARMY DENTAL CORPS.

Temp. Capt. O. G. E. Simpson, Dental Surg., from Spec. List, to be Capt.

Temp. Capt. J. Morrey, Dental Surg., from Gen. List, to be Lt., with the temp. rank of Capt.

TERRITORIAL FORCE.

Maj. J. A. Paterson (late R.A.M.C.), to be Lt., and relinquishes the rank of Maj.

Maj. F. W. Johnson resigns his commn. and is granted the rank of Lt.-Col., with permission to wear the prescribed uniform.

Maj. C. H. Bullen resigns his commn. and retains the rank of Maj.

Capts. B. E. Potter and A. R. Muir to be Majs.

Capt. (actg. Maj.) R. Briercliffe relinquishes the actg. rank of Maj. on vacating the appt. of D.A.D.M.S.

Capt. A. U. Webster (late R.A.M.C.) to be Capt.

Capts. C. B. Johnstone and M. T. Ascough resign their commns. and are granted the rank of Maj.

Capt. J. Howard resigns his commn. and retains the rank of Capt.

Capt. C. W. T. Baldwin is secd. whilst holding a temp. commn. in the R.A.F.

Sanitary Service.—Maj. H. H. Littlejohn resigns his commn. and retains the rank of Maj.

2nd Lond. Sanitary Co.—Capt. F. Fletcher resigns his commn. and retains the rank of Capt.

TERRITORIAL FORCE RESERVE.

Lt.-Col. W. H. Stephen resigns his commn. and retains the rank of Lt.-Col., with permission to wear the prescribed uniform.

DEFENCE FORCE.

Temp. Capt. S. S. Greaves to be temp. Maj. whilst specially empld.

To be temp. Maj.: J. W. Littlejohn.

1st (W. Lancs.) Fd. Amb. (D.F.).—Temp. Maj. F. W. B. Young relinquishes his commission.

2nd (Wessex) Fd. Amb. (D.F.).—To be temp. Maj.: T. M. Jamieson.

To be temp. Capts.: W. J. Radford, W. L. Cowardin, H. G. Ludolph, E. W. Wesley, and G. H. S. Letchworth.

2nd (Lowland) Fd. Amb. (D.F.).—Temp. Maj. J. R. C. Greenlees relinquishes his commn.

ROYAL AIR FORCE.

Flight Lt. V. A. T. Spong relinquishes his temporary commn. on ceasing to be employed, and is permitted to retain the rank of Capt.

HONOURS FOR OPERATIONS IN INDIA AND THE SUDAN.

Officer of the British Empire: Capt. (actg. Lt.-Col.) J. B. Hance, I.M.S.; Maj. (actg. Lt.-Col.) J. B. D. Hunter, I.M.S.; Capt. W. Hunt, R.A.M.C.

Correspondence.

"Audi alteram partem."

HÆMOGLOBIN.

To the Editor of THE LANCET.

SIR,—The interesting leading article in your issue of June 25th on the subject of hæmoglobin omits any statement, except the most general, of the reasons why hæmoglobin is carried in corpuscles rather than in solution in the blood plasma, nor are these at all frequently discussed. It may not be out of place therefore to point out that a solution of hæmoglobin has properties in some respects very different from those of blood.

1. It is possible to obtain a solution of hæmoglobin which, bulk for bulk, contains as much of the pigment as does blood. Such a solution is, comparatively speaking, viscous and therefore could only be driven along a system of fine tubes such as the capillaries by the application of considerable force.

2. A concentrated solution of hæmoglobin, as compared with blood, only passes through filter paper with difficulty, yet by a curious paradox the molecules of which this solution is composed pass through a collodion membrane that would be quite impervious to corpuscles. Hence hæmoglobinuria consequent on laking of the blood.

3. Owing to the viscosity of the solution, any effort to make it pass along a tube merely achieves the displacement of the central core of fluid. The arrangement of the hæmoglobin in corpuscles, which are commensurate in size with the capillaries, ensure the forward movement of the whole contents of the capillary at approximately the same rate.

4. The properties of hæmoglobin as an oxygen carrier are extremely sensitive to properties of the solvent—e.g., its reaction, its partial pressure of CO_2, its potassium content, its temperature, &c. The segregation of the hæmoglobin in corpuscles allows its exposure to the conditions most advantageous for it without imposing such conditions on the body generally.

Without entering into any controversy as to the extent to which the red blood corpuscle may be regarded in itself a living organism, rather than a suitable casing for the sixty-millionth part of one gramme of hæmoglobin, the above facts are sufficient to illustrate the advantages which accrue to the organism by the trick of carrying large quantities of hæmoglobin which is packed inside special corpuscles.

I am, Sir, yours faithfully,

J. BARCROFT.

The Athenæum, Pall Mall, S.W., June 27th, 1921.

ON DEATH FROM RESPIRATORY AND NOT FROM CARDIAC FAILURE.

To the Editor of THE LANCET.

SIR,—A note in the public press on June 20th of a coroner's inquest on a case of sudden death in which the patient's heart continued to act for eight hours after respiration had ceased, reminds me of several instances of this nature, one of which occurred in my clinic at St. Bartholomew's, and three others under my surgical colleagues there. I published this series of cases in the *Edinburgh Medical Journal*, New Series, Vol. III., 1898, p. 145, and communicated them to the Section of Medicine at the International Congress at Moscow in 1897. In all these, and others that have been reported, the lesion in the brain has arisen from abscess, occipital injury, or tumour, and it appears to be certain that the respiratory centre is clearly more sensitive than its neighbour the cardiac

centre, and is the first to yield under undue intracranial pressure.

I am, Sir, yours faithfully,

June 21st, 1921. DYCE DUCKWORTH.

SANATORIUM CONTROLS.

To the Editor of THE LANCET.

SIR,—As the various criticisms of Dr. E. Ward's original article on Controlled Sanatorium Results seem to have brought no light to him, and he reiterates his opinions in your issue of this date, further comment appears to be desirable to prevent the impression remaining in his mind that his presentation of the case against sanatorium treatment is unanswerable. Dr. Ward has correctly guessed that my comparison of other forms of treatment to sanatorium with moonlight to sunlight was picturesque and not mathematical, and was intended to arrest his attention, which it has done to the extent of leading him to look up the relative intensities of the rays from the two luminaries. It is fortunate that I did not employ the words "infinitely superior," or he would have been impelled to criticise the comparison in terms of Einstein's theory of relativity. With regard to expectation of life after sanatorium treatment, taking the Midhurst figures as a standard, if I were a patient under the views enunciated by Dr. Ward my expectation of life would be nil. It would require a complete number of your journal to fully criticise the original paper on "Sanatorium Controls," and in my former letter I merely instanced the case of a patient who remained for three years in an institution to secure a complete arrest of extensive disease, not to sum up the results of 20 years' sanatorium experience, but to endeavour to enlarge Dr. Ward's ideas of time in relation to treatment. He states in your last issue that he included in his results cases in which individuals remained only one month because "a line had to be drawn somewhere," but if so, why not draw it at one week; or, better still, why not follow the rule of some general hospitals which exclude from their statistics any deaths occurring within 48 hours of admission? What would be thought of a fire brigade which exercised its activities on a conflagration for one hour, then withdrew; and included the attempt among the published results of its efforts? The statement is made that three months is the standard period of sanatorium treatment in this country for working-class patients, and I should be interested to learn who fixed this standard, for I have never heard of it, and it certainly is not the standard in the West Riding of Yorkshire.

Twenty years ago I decided upon six months as a reasonable period to give a moderately early case an opportunity of securing arrest of the disease; but if Dr. Ward's "standard" is general, there need be little surprise if sanatorium treatment is condemned. Has it not occurred to him that a more prolonged period is the necessity and not improved methods; or is the "standard" so fixed in his mind that a method of treatment must be found which will prove effective in three months? From a careful study of a patient the experienced sanatorium physician should form his opinion of the duration of treatment likely to be necessary, and when collating his statistics could give under a separate heading the results in cases of individuals who left the institution prematurely.

Dr. Ward writes of the enormous expense of retaining patients in a sanatorium for an extended period of a year or two; but he is evidently unaware of the length of time it may be necessary to isolate patients: some may live five or six years in a hospital, and have done so to my knowledge, at an expense by no means inconsiderable. Some voices are now crying out that improved housing conditions are the desirable means for the 'cure' of tuberculosis; others that "prevention in the young" is the watchword; while the patient with declared pulmonary tuberculosis is to be ignored apparently, or left to die quietly—if he will—in an isolation hospital, as Dr. Ward implies by his words "the most hopeful means I can see of dealing with the tuberculosis problem is by adequate isolation of infective cases." He is consoled and supported in his poor opinion of sanatorium treatment "by the whole-hearted agreement of several practitioners of experience," but I have usually found that practitioners who did not speak favourably of it were those who were unable to diagnose the disease in its early stages. Recently a patient came under my care who had a severe initial attack of hæmoptysis two years before, and should have been sent to a sanatorium then; but her medical attendant shared Dr. Ward's opinion that home treatment was as good as, or better than, sanatorium; and she was naturally in an advanced condition of disease when allowed to visit a tuberculosis officer. She will be a considerable expense, unfortunately, as an inmate of a hospital for advanced cases now, whereas if Dr. Ward had no supporter for his views there might have been some likelihood of arresting the disease within 12 months at a much lower expense. Dr. Ward seems to consider the quotation of one case as though it comprised a statistical table, so I mention that I merely cite this as a pernicious example of what may be characterised as the logical outcome of his "teaching."

I am, Sir, yours faithfully,

THOMPSON CAMPBELL, M.D.,
Medical Superintendent, West Riding County
June 25th, 1921. Sanatorium, Ilkley.

THE VALUE OF SANATORIUM TREATMENT.

To the Editor of THE LANCET.

SIR,—The arguments used concerning the value of sanatorium treatment are full of fallacies; and it is surprising that these have not been widely recognised. I will here refer to one only. A patient needing for recovery certain conditions of life, which he can sometimes get at home and can usually get at a sanatorium, is given these conditions at a sanatorium for three months when he needs 12, six months when he needs 24 or 36. The improvement, or the reverse, is rightly credited or debited to the institution. In the next stage of treatment, at home under more or less unfavourable conditions, he sometimes continues to improve but often relapses. Surely this part of the result should be credited or debited to the home conditions, not to the sanatorium. If not, then if a rheumatic patient after treatment at a spa or by salicylates subsequently relapses, the relapse should be debited to the previous treatment; but nobody dreams of doing so.—I am, Sir, yours faithfully,

F. R. WALTERS,
Joint Tuberculosis Officer to the
Farnham, June 22nd, 1921. Surrey County Council.

THE VALUE OF ENGLISH PHTHISIS SANATORIA.

To the Editor of THE LANCET.

SIR,—Dr. E. Ward, tuberculosis officer for South Devon, has done useful service in calling in question the value of some at least of our working-class phthisis sanatoria. His carefully written paper, read in Exeter last January, gives the following arresting figures for first stage cases amongst the poorer classes. (A) = sent to sanatoria; (B) = not sent to sanatoria:—

	(A) per cent.	(B) per cent.
After Two Years.		
Classes 1 and 2—i.e., cures and doubtful cures	64	88
Classes 4 and 5—i.e., "too ill to work" and "very ill"	21	3
Dead	6	1
After Four Years.		
Cures and doubtful cures	67	83
Too ill to work and very ill	11	6
Dead	11	3

His statements, thoughtfully safeguarded as they are, merit the most careful attention—the more so

that no evidence to the contrary seems to be forthcoming. Dr. Ward tells us that most of the cases discharged from these sanatoria with "disease arrested" relapse within a short time; that to say that 20 per cent. of early cases are cured is probably to make an overstatement; that patients commonly lose ground on returning home more quickly than if they had remained at home; that those, of his series, who were longest in a sanatorium gave worse results than those who had been only a short time in one; and that no case which seems to be improving at home should be sent to a sanatorium.

Such an indictment, coming from a competent observer, calls imperatively for a pause in our public expenditure on phthisis sanatoria until the whole subject has been thoroughly investigated. Meanwhile there are some points which need to be considered.

1. Our sanatoria appear to be furnishing considerably worse results than might reasonably have been anticipated from the Nordrach experience. But Nordrach was singularly well placed and many of our sanatoria are remarkably badly placed. Abundant proof has been given of the importance of securing, especially in this country, sites well sheltered from the impact of strong, prevalent rain-bearing winds, yet practically no attention has been paid to this proof and until recently no serious attempt has been made to verify it. This inattention may be explained partly by the general inattention with which many members of the profession read their journals, partly by the great financial inconvenience of accepting the conclusion. The serious waste of public money on bad sites, now coming into view, may presently, however, make it even more inconvenient to ignore it. For there are certainly sanatoria which, from their faulty situation, may reasonably be regarded as death traps for their phthisical inmates, and such sanatoria should be scrapped forthwith.

2. I believe there are many cases for which the climates of this country are not so suitable as certain climates abroad, notably the climates of some high altitudes where windlessness is a feature—Davos for instance. Before the sanatorium boom began these climates were well recognised and highly valued by the medical profession.

3. Dealing with our poorer patients, for whom distant resorts are not available, we shall do well to remember Walther's view that sanatoria are useless for them, and Noy Scott's recently expressed opinion "that if much of the money, which has been spent on sanatoria, had been used to enforce by-laws regarding fresh air and sunlight in cottages we should have had better results."

4. In emphasising the results of sanatorium treatment and treatment outside, we shall, I am sure, become utterly confused unless we restrict ourselves to sanatoria in places sheltered from strong rain-bearing winds.

5. Lastly, we shall do well to make certain that all the "early cases cured" have been really tubercular; that some so classed have not been tubercular, I fancy most people are convinced.

I am, Sir, yours faithfully,

Exeter, June 25th, 1921. W. GORDON.

INTERNATIONAL SANATORIUM INSPECTION.

To the Editor of THE LANCET.

SIR,—Dr. E. Ward, in your issue of June 25th, repeats under the title "A Further Consideration of Sanatorium Controls," the valuable suggestion, made in your leading article of April 16th, that, in view of the unsatisfactory state of sanatorium treatment in this country, public sanatoriums should be inspected by a commission of experts who would investigate the conditions which at present make sanatorium treatment a byword and a reproach. With regard to the composition of such a commission I doubt whether Dr. Ward's trinity—a general practitioner, a surgeon, and an intelligent layman—would contribute more than a Gilbertian atmosphere to the proceedings; we all know the non-expert inspector as an amiable old woman of either sex, who ambles round an institution, seeking knowledge and finding "eyewash." But I agree with Dr. Ward in distrusting a body composed solely of medical superintendents in this country; the accountant who audits his own figures is apt to do so with his tongue in his cheek. It is unfortunate that, in the United Kingdom, the names of the persons familiar with the modern treatment of tuberculosis do not, as a rule, carry much weight; and the persons whose names do carry weight are, with a few exceptions, unfamiliar with the modern treatment of tuberculosis. When we compare the remarkable achievements of foreign sanatoriums, such as Vejlefjord and Loomis, with the disheartening records of our own sanatoriums, the question naturally arises: Could not the medical officers of foreign sanatoriums which have "delivered the goods" be induced to inspect and report on the public sanatoriums in this country? Of course, national pride would kick at such a notion. Last summer, when I met Prof. Saugman in London and he expressed a wish to visit a certain well-known sanatorium, national pride prompted me to divert him from his object, for I knew that this sanatorium was about 15 years behind the times in lung collapse treatment, in which Prof. Saugman is a pioneer. But we might, perhaps, circumvent our rather inconvenient national pride by making international inspection of sanatoriums reciprocal, and in sending our own medical superintendents to inspect and report on foreign sanatoriums, we should at once soothe their feelings and surreptitiously increase their knowledge and usefulness.

I am, Sir, yours faithfully,

CLAUDE LILLINGSTON.

Gorleston-on-Sea, June 25th, 1921.

RESULTS OF SANATORIUM TREATMENT.

To the Editor of THE LANCET.

SIR,—At this sanatorium we have excellent opportunities for finding out what happens to our cases after discharge. We find the following to be true: (1) that no case practically makes a recovery which does not show marked improvement whilst in the sanatorium; (2) that cases early in time, that is to say, cases which have exhibited symptoms of activity for a short time before admission, usually progress to complete recovery. I have come to the conclusion that all cases which will get well outside the sanatorium will get well in the sanatorium; in addition, many cases that will get progressively worse when outside will recover in the sanatorium; that the only chance for most bad cases is to admit them to the sanatorium. I attribute the difference in results obtained here in respect of early cases mainly to the liberal amount of rest in bed these cases obtain, and to the regulation of the amount of rest required by means of a carefully registered rectal temperature. The duration of residence of these cases is usually five calendar months, though in the case of pleurisies this may be in some cases reduced to three months; if they are sent in at once, the same might apply to cases of hæmoptysis. To produce any real lasting results the patients should on discharge be able to do without after-care except in so far as they can exercise it themselves, and should as a rule be able to go on with their previous occupations.

To understand this subject properly it is necessary to take very careful histories of these cases, for by this means it becomes possible to discover the time when these patients should first have been treated, and much valuable information will be gained which may prevent mistakes being made in the future. Thus if a patient has suffered from pleurisy five years previously, and we find that he has during that time developed into a typical case of chronic pulmonary tuberculosis, we should admit if we omitted to treat him properly in a sanatorium that we have committed a gross blunder. Whether a patient should be treated in a sanatorium or not will of course

depend on the presence or absence of fever, as indicated by the taking of a rectal temperature and the presence or absence of symptoms of active disease. Though the isolation of the advanced case should be encouraged where possible, it should be remembered that the treating of the early case is the proper way to eradicate the disease; for we must all surely admit that most cases which can be treated as advanced have been infectious often for long periods, and must during that time have infected a considerable number of people; furthermore, the prospect of segregation will cause many persons to hide their disabilities for as long as possible and thus cause spread of the disease.

In conclusion, I would urge that such sanatoriums as exist should be used for the purpose for which they were intended—that is, for the treatment of cases early in time and therefore for the most part curable, and that always the early case should be given the preference over the advanced; it should of course be remembered that if an early case be sent to a farm or the seaside for a few months before going to a sanatorium, at the expiration of that period it may be impossible to accomplish anything. In addition, it would be as well that when these patients do get admitted to a sanatorium they should be treated correctly. I may say that at a time when I had the admission of these cases in my own hands I had little difficulty in persuading patients to undergo treatment. Of the first 500 cases admitted to the Ayrshire Sanatorium who remained for five months 120 were in the first stage, and of these in 1921 77 per cent. were well; 182 were in the second stage, and of these 52 per cent. were alive, many at their previous occupations; and of 198 third stage cases only 17 per cent. were alive. The duration of time in these cases from their admission to when the calculation was made varying from July, 1906, to August, 1912, the calculation was made by Mr. Steven of Edinburgh in April, 1921. I am, Sir, yours faithfully,

EDWARD E. PREST.

Ayrshire Sanatorium, New Cumnock, June 25th, 1921.

CONCERNING THE ELECTRICAL ACTION OF THE HUMAN HEART.

To the Editor of THE LANCET.

SIR,—I greatly admire Prof. Bayliss's book entitled "Principles of General Physiology," and regard it as a valuable contribution to the advancement of physiological knowledge. It is the outcome of the matured thought of one of the leaders of the premier school of physiology in London and may be expected to serve for many years to come as a standard work of reference for many future workers and writers. The book presents an elaborate digest of modern physiological fact and doctrine, and forms a very convenient and accessible store-house of information. Not the least of its merits consists in the bibliographical accessories by which a very humanising quality is imparted to the text.

Uniform perfection of treatment over so extensive a field is hardly to be expected of any writer, however learned and industrious he may be, and as the author himself states in his preface "Important points have most probably escaped notice and I shall be very grateful to readers who will inform me of these omissions and also for criticism in general."

So I shall take the liberty of calling attention to an omission in the account of the electrical action of the human heart. In the section (third edition, pp. 656 et seq.) dealing with the electrical changes of the heart Prof. Bayliss gives an account of the subject that does not contain any allusion to my own discovery of the primary facts in 1887 which formed the point of departure for a long series of investigations by many physiologists and physicians. Nor does he include in his bibliography any one of the several papers on the subject published by me during the period 1887–89. Of these papers the first was published in the *Journal of Physiology*, Vol. VIII., p. 229, and the last and most complete in the Philosophical Transactions of the Royal Society, p. 169, 1889, under the title: "On the Electromotive Changes connected with the Beat of the Mammalian Heart, and of the Human Heart in particular." The subject was taken up and extended by Einthoven, whose first paper appeared in 1895 in *Pfluger's Archiv*, Vol. LX., p. 101, under the title "Ueber die Form des menschlichen Electrocardiogrammes," and the opening sentence of this paper contains a perfectly clear and frank acknowledgment, as is customary between men of science, which runs as follows: "Vor mehr als 6 Jahren bereicherte Augustus D. Waller, die Wissenschaft mit der Kenntniss des menschlichen Electrocardiogrammes. Er zeigte, dass die rhythmischen Schwankungen, welche der electrische Spannungsunterschied zwischen den verschiedenen Stellen des Korpers erfahrt, aus keine andere Weise als durch die electromotorischen Wirkungen des Herzmuskels verursacht werden."

I am, Sir, yours faithfully,

A. D. WALLER.

Physiological Laboratory, University of London, South Kensington, June 18th, 1921.

To the Editor of THE LANCET.

SIR,—I am obliged to you for letting me see in advance a communication from Prof. A. D. Waller. I regret to have omitted to refer to the fact that Prof. Waller was the first to show that an electrical change associated with the beat of the human heart can be detected by leading off appropriate points on the surface of the skin to a sufficiently delicate recording instrument, and will endeavour to correct a new edition accordingly. I think, however, that it will be obvious that in a book dealing with general principles a detailed historical account would be out of place in the case in point. My object was to give as briefly as possible such a description as would enable a reader to understand the modern use of the electrocardiogram as a means of diagnosis. Prof. Waller has no ground of complaint in my references to other work of his in which results adding to our comprehension of the phenomena described were obtained. I am, Sir, yours faithfully,

June 27th, 1921. W. M. BAYLISS.

THE DEBT OF OUR TROPICAL DEPENDENCIES TO MEDICINE.

To the Editor of THE LANCET.

SIR,—All interested in the advance of tropical medicine and hygiene will welcome the prominence lately given to the much-needed recognition of their importance as essential and potent factors in the prosperity of our colonies and dependencies. Attention has rightly been drawn to the urgency of measures for prevention and treatment, and the call for research into the numerous problems presented by the extensive range of disease in the tropics. The baffling solution of many of these problems has been left too long to very occasional special commissions, or to the unaided and often thankless efforts of individual workers. It is, indeed, becoming more and more incumbent upon the Government not only to give wider support, by special sanction and State grant, to the elucidation and treatment of disease in the schools of tropical medicine at home, but also by establishing additional research and training institutions in our Crown Colonies, to assist the work of individuals, and to spread the gospel of hygiene among the native races. The very important medical side of our colonial missions, hitherto solely dependent on voluntary aid, has justly proved its claim to Government support. That this is the case has been well shown by Dr. J. B. Christopherson in an article on the medical work of the Universities' Mission to Central Africa, contributed to the society's journal of May, 1921. He emphasises the important rôle which this branch of the Mission has filled in the advance of tropical medicine, and the alleviation of

the scourge of disease among the natives of our Central African colonies, thereby materially assisting the cause of colonial progress and development. Undoubtedly the wide field, open to the medical side of our missions, for preventive work and remedial treatment in such diseases as ankylostomia, bilharzia, yaws, malaria, dysentery, and sleeping sickness cannot be covered if relying entirely, as in the past, on inadequate voluntary subscription. As colonial administration reaps the benefit of the efforts of the Mission's medical workers, it is but just that financial support should be forthcoming from the Government to supplement and extend their valuable assistance in the prevention and treatment of tropical disease.

The educational aspect, particularly of the native in matters of tropical hygiene and causation of disease, though vitally affecting successful administration and the welfare of colonial populations, has been comparatively ignored. In the interests of the colonies concerned, as Dr. Christopherson rightly urges, much would be gained by popularising a scheme of elementary education for the native in the essentials of tropical disease and hygiene, and so ensuring his coöperation with medical endeavour in the task of rendering unhealthy regions habitable. For, clearly, the economic prosperity of tropical Africa is largely dependent on the country being made fit to live in, both for European and native. In this connexion medical science points out the surest way not only of achieving this object, but also of solving the labour question, a problem as vital in the tropics as it is at home, and therefore deserving of the fullest consideration by the governing authorities.

At a recent meeting of the Royal Society of Tropical Medicine and Hygiene, when an important paper was read by Dr. Claude Marshall on a new method of treating sleeping sickness by serum therapy, a vote was unanimously carried advocating that special representation be made to the Colonial Office, urging the provision of every facility for the investigation and trial of the method described. Among those taking part in the discussion was a distinguished visitor, His Excellency Sir Hugh Clifford, governor of the United Provinces of Nigeria, who spoke in high praise of the great debt which the colonies owed to the advances in our knowledge of the prevention of tropical disease. He laid particular emphasis on the importance of education in matters of health, and of the duty, attaching to all newcomers to the tropics, of acquiring a preliminary training in the fundamentals of tropical medicine and hygiene. It is greatly to be hoped that the unanimous feeling expressed at this meeting will produce very practical results in the guarantees of means of research into so widespread a disease as sleeping sickness, affecting, as it does, the welfare of a large native population, and, by its crippling influence on industry, determining, to no small extent, the commercial success and future of our African colonies. There seems good ground for belief that the Colonial Government authorities are fully alive to the interests at stake, and to the call for forwarding scientific research in the tropics by adequate and generous financial support. Will the Government meet that call?

Mr. Winston Churchill, Secretary of State for the Colonies, in his speech at the dinner given to the representatives of the Rockefeller Foundation, drew attention to the well-known achievements of scientific bodies in the alleviation of disease in all parts of the world, chief among them being the Rockefeller Foundation. He guaranteed that the Colonial Office would do all in its power to assist them in their great work; for the need of such help in the solution of problems of general health was fully realised, and the study of tropical disease, whether malaria or sleeping sickness, or the many other evils of the tropics, was, indeed, a work of mercy and urgency. Coming as it did from the Secretary of State for the Colonies, this assurance of the recognition of the need for help is a decided step towards attainment of the means to further research in the vast field of tropical medicine, whether by Government grant or private endowment. Though primarily in the cause of humanity, Mr. Churchill might rightly have urged the expediency of colonial success as demanding earnest attention to the part played by sound and scientific knowledge of the prevention of disease in the tropics—the keystone of the future prosperity of our colonial empire responsibilities, and the foundation of successful colonial enterprise.

Too much reliance has been placed in the past on outside financial help in the cause of humanity and science, derived from the munificent spirit of individuals such as the late Sir Alfred Jones, from foundations such as the Rockefeller, and from our missionary societies. Without question the tropical side of the science of medicine and hygiene, dependent in considerable measure on these sources of help, has not only materially assisted colonial progress, but has established an indisputable claim to much-needed and indispensable financial backing from the State. The State should contribute, in proportion to the benefit it has received from science, and pay its share of what is justly speaking—a debt.

I am, Sir, yours faithfully,

J. GRAHAM FORBES, M.D., F.R.C.P.

Harrington-gardens, S.W., June 23rd, 1921.

THE FEDERATION OF MEDICAL AND ALLIED SOCIETIES.

To the Editor of THE LANCET.

SIR,—Dr. E. Rowland Fothergill's letter in your issue of June 18th clearly shows that the profession is not united. I will go further and say that, except in a very superficial manner, neither the Federation of Medical and Allied Societies nor the British Medical Association can speak for any large body of medical men. Now if the General Medical Council could be largely increased by elected representatives, say 70 in number, surely that body would be able to represent the profession. It would require an Act of Parliament to make this increase in its numbers, but if the united body of doctors demanded it, it could be done.

This idea is one of the main objects of the National Medical Union, and it would encourage us to push the matter forward if medical men who agree with the idea would join the union, if not as members, then as associates paying little or nothing in the way of subscription.

I am, Sir, yours faithfully,

E. H. WORTH,
Hon. Sec., National Medical Union.

2, Aldrington-road, Streatham, S.W., June 19th, 1921.

A DISCLAIMER.

To the Editor of THE LANCET.

SIR,—My attention has been directed to statements appearing in Great Britain to the effect that I gave evidence on the subject of the Prevention of V.D. before a Departmental Committee in 1912. The Committee may have had some of my publications in front of them, but I was neither asked for, nor have I given, any evidence in connexion with the inquiry. It is therefore not correct to say that my evidence had been considered.

I am, Sir, yours faithfully,

J. W. BARRETT.

Melbourne, Australia, May 4th, 1921.

DONATIONS AND BEQUESTS.—By will the late Sir Rowand Anderson left £1000 each to the Royal Infirmary, Edinburgh, the Royal Edinburgh Hospital for Incurables; and the Royal Edinburgh Hospital for Sick Children.—The late Mr. Thomas Fielding Johnson, J.P., of Leicester, bequeathed £1000 each to the Leicester Royal Infirmary and the Leicester Maternity Hospital; £500 to the Children's Hospital in connexion with Leicester Infirmary; £250 each to the County Home for Incurables, at Leamington, and the Charnwood Forest Convalescent Home; £200 each to the Institution for the Blind and the District Nursing Association; £150 to Dr. Barnardo's Homes; and £100 to the Wycliffe Society for Helping the Blind.

Parliamentary Intelligence.

HOUSE OF LORDS.

WEDNESDAY, JUNE 22ND.

The Dentists Bill.

THE House went into Committee on the Dentists Bill, the Earl of DONOUGHMORE in the chair.

Lord GREVILLE moved an amendment to Clause 1 (prohibition of practice of dentistry by unregistered persons) to provide that unqualified dentists should be placed on a separate register. He did not see how by adding unqualified men to a qualified list they were really increasing the number of qualified dentists. They would not help the shortage of dentists by transferring an unskilled man to a qualified list, because they did not make him any more skilled in the profession by so doing. All they did was to give him a false title and mislead the public. The placing of unqualified men on a separate list was strongly urged by the British Dental Association, but they were told by Sir Alfred Mond that if they pressed for it he would withdraw the Bill. They then agreed to the point, but that did not mean that the majority of qualified dentists agreed. He thought that his amendment was a very reasonable demand on the part of men who had spent several years in passing their examinations and in studying in hospitals in order to qualify for their profession. The unqualified man could start with merely a sign outside his door; and once he transferred to the register he obtained a great many benefits. One of the qualifications to be transferred to this list was "good personal character." That was no doubt a most estimable thing, but if they were told that in the absence of a qualified dentist some eminent divine was going to attend their teeth, they might derive great spiritual benefit, but he did not think they would obtain much physical consolation.

The Earl of ONSLOW said he had just received from the British Dental Association, which was to dentistry very much what the British Medical Association was to medicine, the following telegram:—

"British Dental Association in annual meeting assembled at Bath this day unanimously support Dentists Bill as submitted by Minister of Health.—(Signed) STUART CARTER, President."

The number of persons actually practising dentistry who were not registered under the Act of 1878 was at least two to one of those registered under that Act and possessing dentistry degrees. It was quite a misapprehension to suppose that the Bill if passed as it stood would admit unqualified practitioners *en bloc* as qualified dentists.

The Marquess of SALISBURY: What will protect the public?

The Earl of ONSLOW said that they would be protected by the provision that these men must have practised for five out of the last seven years in this country, and so on. As regards the question of a separate title for those who possessed dental degrees, he (Lord Onslow) was proposing to move after Clause 3 a new clause which was primarily intended to prevent fraudulent representations by people describing themselves as something which they were not, and making it an offence for anyone to describe himself as a surgeon dentist unless he was in possession of a degree recognised by the Dental Board. All those persons at present on the register (except a very few persons still practising who were admitted by the Act of 1878, although holding no degrees) were holders of degrees in dental surgery, and would therefore have the exclusive right of calling themselves surgeon dentists. The Act of 1878 was very much less stringent than the present Act and admitted to the register all those who were practising dentistry at the time of the passing of the Act. This Bill proposed much stricter qualifications. The question of the register was not a new one. It was very carefully considered by a Committee of the Privy Council under the chairmanship of Mr. ACLAND. That Committee contained members representing every shade of opinion—qualified dentists, unqualified dentists, physicians, surgeons, civil servants, hospital authorities, and Members of both Houses of Parliament, and after the most careful examination of witnesses they came to the conclusion that this was a fair and just arrangement to the qualified dentists, to the unqualified dentists, and to the public. Unless the unqualified men were granted the full status of their brethren who possessed qualifications, how could it be expected of them that they would give up the free and unfettered position which they now occupied? He very much doubted whether Parliament would be willing to force them to do so if this amendment was carried, and the benefits which the Bill conferred might thereby be lost.

Viscount KNUTSFORD asked if their lordships had ever known the medical profession agree unanimously upon anything before? Yet they were unanimously in favour of this Bill, which a few lay people said was a great shame to them, because unqualified men were to be admitted on the same register as themselves. He was on the Committee to which the Government referred this question and when he saw his fellow members he felt certain of one thing—namely, that they would never come to an agreement. He was not certain that there would not be murder done before the end of their sitting, because they had on that Committee the head of the unqualified dentists, a member of the British General Medical Council, one of the leading lights among the qualified dentists, a doctor from the Ministry of Health, a doctor from the Ministry of Education, himself, as a layman, another layman, and a Socialist. But when they heard the evidence they were absolutely unanimous in recommending that the unregistered men should be admitted to the same register as the qualified men. The main reason was to place them under control and to stop all the malpractices which were going on among those men. All titles were misleading. The old Act tried to restrict the title. It said: "You must not call yourself a dentist, but you can call yourself a dental surgeon or a dental practitioner, or a dental specialist." No one, he contended, wanted this special list, and if the amendment were passed it would wreck a very useful Bill.

The Marquess of SALISBURY said that there had been a body of technical medical opinion hurled at their heads at which the bravest might quail, but he was not sure when they came to consider the thing very closely that the case was so formidable as it appeared. He had received a telegram from Scotland which said:—

"Scotland agreed to the second reading in the Commons on the understanding that the amendments would be left to the unbiased decision of the Committee. The Government officially opposed amendments, despite understanding. Beg you to support Lord Greville in interests of good government and good faith.—MEDICAL DENTAL DEFENCE UNION, SCOTLAND."

Lord RIDDELL: Who are they?

The Marquess of SALISBURY said perhaps the noble lord knew better than he did. At all events he had concealed nothing. He had also a telegram addressed to another noble lord from Ireland: "Will you on behalf of Committee of Irish dentists please support Lord Greville's amendment to Dentists Bill this afternoon." So they were not quite certain about this volume of technical opinion being all on one side. But he wished to put in a word for the patients. It was very easy for technical people to come to an agreement, but what about the patients—the people who had toothache? Why should the present generation be handed over to unskilled dentists, because in the future there would be a better arrangement?

Lord RIDDELL said the Bill might necessitate certain anomalies for a temporary period, but it was well worth while to endure those evils in order to secure the good which would certainly result when dentistry had been placed on a proper footing as this Bill proposed to place it.

Lord SOUTHWARK thought that it would be a great misfortune if the Bill was lost through the insertion of amendments which might be opposed in the House of Commons.

The amendment was negatived, and the clause with minor amendments was agreed to.

The Earl of ONSLOW moved a new clause providing that a person registered under the principal Act—

(*a*) shall by virtue of being so registered be entitled to take and use the description of dentist or dental practitioner;

(*b*) shall not take or use, or affix to or use in connexion with his premises, any title or description reasonably calculated to suggest that he possesses any professional status or qualification other than a professional status or qualification which he in fact possesses and which is indicated by particulars entered in the register in respect of him.

The clause was agreed to.

Several other minor amendments were agreed to, the Committee stage of the Bill was completed, and the measure was reported to the House.

HOUSE OF COMMONS.

TUESDAY, JUNE 21ST.

Finance Bill—Spirits in Hospitals.

The House went into Committee on the Finance Bill, Mr. J. HOPE in the chair.

Mr. LEONARD LYLE moved the following new clause:—

Section 4 of the Finance Act, 1918 (which provides for the reduction and allowance of duty in respect of spirits used in medical preparations or for scientific purposes), shall apply also to spirits used in hospitals on prescription, while Section 7, Subsection (1), of the Finance Act, 1920, shall not apply to wines supplied on prescription in hospitals, and the Commissioners of Customs and Excise may make regulations for carrying this provision into effect.

He said that he moved this clause last year on behalf of the hospitals, and he was afraid that the late Financial Secretary to the Treasury was fearful of what might happen to spirits in hospital once the cork had been taken out of the bottle; but he was putting this forward this year because

there was now a different Chancellor of the Exchequer, who came from across the Border. He was hopeful that he would be slightly more sympathetic and less fearful of what might happen when the cork did come out of the bottle. The hospitals had to pay the full spirit duty, which was very heavy, and they were all very sympathetic towards the hospitals. During the war the Red Cross hospitals used to get their spirits at a much reduced duty, and he wanted to see that the hospitals which were so badly off just now got this small concession.

Mr. HILTON YOUNG (Financial Secretary to the Treasury) said it had never been possible to look at this proposal favourably from the point of view of the revenue. A considerable concession had been made to hospitals in regard to exemption on spirits actually used in medical prescriptions. This went a little further, and the great objection would be that it would constitute a very serious breach of the control of the Inland Revenue over the use of spirits. He thought if Mr. Lyle were acquainted with some of the opinions of the hospital authorities which had been prominently brought before him (Mr. Young) he would find that many responsible authorities were reluctant that they should undertake such difficult responsibilities as those proposed in the amendment. It was thought by a responsible body of opinion that the danger of abuse which would exist would not compensate the hospitals for the benefit they would derive pecuniarily from this exemption. For these reasons both in the interests of the revenue and of the hospitals he found it impossible to accept the new clause.

Mr. LYLE said he did not desire to divide the Committee on this occasion, but he would like to say that the British Hospitals Association quite approved of the amendment. He would, however, withdraw it.

The amendment was by leave withdrawn.

WEDNESDAY, JUNE 22ND.

Work of Consultative Health Councils.

Mr. LAWSON asked the Minister of Health whether he would supply a statement as to the work accomplished by the Consultative Councils appointed under the Ministry of Health Act, 1919.—Sir ALFRED MOND replied: The forthcoming annual report of the department for 1920-21 will include a statement on this matter.

River Lee Pollution.

Mr. G. W. H. JONES asked the Minister of Health whether his attention had been called to the pollution of the River Lee by sewage; whether he was aware that its present state constituted a menace to public health; whether he would take steps for the purpose of remedying the present state of affairs.—Sir ALFRED MOND replied: I am not aware that the present state of the River Lee constitutes a menace to public health, but if the hon. Member has any information to support the suggestion I shall be much obliged if he will supply me with it so that I may consider what action should be taken.

Washington Conventions.

Mr. CHAMBERLAIN (Lord Privy Seal), in reply to Major HILLS and Mr. GEORGE BARNES, said that he hoped that it would be possible to provide an opportunity for the further discussion that had been promised on the Washington Labour Conventions on Friday in next week, but that must not be taken as an absolute promise.

Medical Officers' Leave.

Sir MAURICE DOCKRELL asked the Secretary for the Colonies whether he could have extended to the Royal Army Medical Corps and Indian Medical Services the recent orders, General Routine Orders No. 24, of Jan. 10th, 1921, and No. 437, of May 4th, 1921, permitting officers other than those of the Royal Army Medical Corps and Indian Medical Services who had completed their time in Mesopotamia, and are due to serve a further period in India, such leave as they might be entitled to under existing leave rules before proceeding to India.—Lieut.-Colonel Hon. G. F. STANLEY replied: The question of the grant of leave to the officers referred to is a matter for the local military authorities. Officers of the Royal Army Medical Corps whose tour of foreign service is five years, serve two years in Mesopotamia and three years in India, and this procedure could not be carried out if officers were granted leave on the expiration of their period of service in Mesopotamia before transfer to India.—Sir MAURICE DOCKRELL: Why is there any differentiation between these medical officers and the ordinary combatant officers, and if they are to be sent after two years in the frying-pan of Mesopotamia to the fire of India for three or more years does the hon. gentleman not think they want cooling down, and will he send them to the hills for three or four months?—Lieut.-Colonel STANLEY: The question of difference between medical and combatant officers has always been the same, that medical officers go for a certain tour of duty abroad. As to the second part of the question, I am afraid I can add nothing to the answer I have already given.—Sir MAURICE DOCKRELL: I am pleading with the hon. and gallant gentleman that if he is sending them for three years to India he would allow them to be posted for three or four months in the hill country to give them a chance of getting their sea legs again.—The SPEAKER: The hon. gentleman had better put that question on the paper.

Consumption of Alcoholic Beverages.

Mr. KENYON asked the Chancellor of the Exchequer the consumption of beer, spirits, and wine in the United Kingdom during the quarters ending March 31st in the years 1918, 1919, 1920, and 1921.—Sir ROBERT HORNE (Chancellor of the Exchequer) replied: The following table shows the net quantities of beer, spirits, and wine retained for home consumption in the United Kingdom during the quarters ending 31st March in each of the years 1918, 1919, 1920, and 1921:—

	1918.	1919.	1920.	1921.
Beer, standard barrel	2,525,531	3,454,607	5,439,139	5,793,733
Spirits, proof gallon	3,271,000	3,766,000	6,363,000	4,436,000
Wine, gallon	2,929,000	4,795,000	5,565,000	2,838,000

THURSDAY, JUNE 23RD.

Dr. Addison's Salary.

The House went into Committee of Supply on a vote of £42,589 (including a supplementary sum of £6050) for salaries and expenses of Cabinet offices, &c., Mr. JAMES HOPE in the Chair.

Mr. LLOYD GEORGE (Prime Minister), in moving the vote, said that when the Government came to the conclusion after some reflection that it was necessary for some time to continue the post of Minister without portfolio it was done from no profligate desire to squander the taxpayers' money. He asked the House as a question of confidence in the Government to enable them to retain the services of Dr. Addison till the end of the session.

Lieut.-Colonel GUINNESS accepted a suggestion from the Prime Minister and moved the reduction of Dr. Addison's salary by £2,500.

Viscountess ASTOR defended Dr. Addison, who, she said, had only carried out at the Ministry of Health the policy of the Government and the policy which that House had passed. She was afraid that he had been a little too progressive for some people. She did not want to waste money; she wanted to save it. But there were things that were more valuable than money in the country, and one of them was public health. Some day hon. Members would have to face a different constituency and they would be told that they tried to do away with the Ministry of Health and they tried to do away with infant welfare organisations—things about which Dr. Addison cared deeply and for which he had worked hard.

After considerable debate, Mr. A. CHAMBERLAIN (Lord Privy Seal) moved the closure which was carried by 250 votes to 40.

Colonel GUINNESS's amendment to reduce Dr. Addison's salary by £2500 was then put and agreed to.

The State of the Voluntary Hospitals.

Sir ALFRED MOND, Minister of Health, announced that in view of the serious state of the voluntary hospitals the Government have decided to ask the House to vote a supplementary estimate of £500,000 in aid of deficiencies during the present year. The recommendation of the Cave Committee as to the control of such money by a Commission would, said the Minister of Health, be followed, and he proposed to appoint, as chairman of an *ad hoc* Commission for distribution, the secretary of the Ministry of Health, Lord Onslow. In reply to questions he stated that the Irish hospitals would not share in the distribution.

Inquiry on Light Artificial Limb.

Major COHEN asked the Minister of Pensions whether it was his intention to set up a court of inquiry to consider the question of the advantages of the light artificial limb.—Major TRYON replied: Yes, sir.

Pensions Administrative Expenses.

Mr. ROBERT RICHARDSON asked the Minister of Pensions the amount of administrative expenses of local war pensions committees for the year ending Dec. 31st, 1918, and Dec. 31st, 1920.

Mr. ALFRED DAVIES asked the number of persons employed on the staff of the Pensions Ministry on Dec. 31st, 1918, and Dec. 31st, 1920; and the number of persons receiving salaries of £500 per annum or over, including bonuses, on Dec. 31st, 1918, and Dec. 31st, 1920.

Mr. MILLS asked how many officials in his department at present received a salary of £1000, including war bonus, or over; and how many received a salary of £1000 or over in June, 1914.—Major TRYON replied: There can be no just comparison between 1918 and 1920. From 1918 onwards the work of war pensions committees was, as my

hon. friends know, largely increased. Further, the staff of local committees which in 1918 was mainly voluntary is now employed on a salaried basis. In 1918, before the extension of the work due to demobilisation and other causes, the approximate amount of the administrative expenses of local committees was £500,000. In 1920 it was £1,200,000. This increasing expenditure was one of the reasons which actuated my right hon. friend in appointing the Departmental Committee of Inquiry over which I preside. As regards the staff in the direct employ of the Ministry the numbers on the dates mentioned in 1918 and 1920 were 9036 and 17,604 respectively, exclusive of hospital staff. The present number of officials (including 151 medical officers employed on a temporary basis) who are in receipt of salaries of £1000 a year or more, including bonuses, is 184. The number receiving £500 a year or over, including bonuses at the rates mentioned in 1918 and 1920, were respectively 208 (including 160 medical officers) and 680 (including 642 medical officers).

Regional Pension Awards.

Mr. WALTER HALLS asked the Minister of Pensions the number of pensions awarded by each region during the six months ending Dec. 31st, 1920, and the administrative expenses of each regional headquarters during the same period.—Major TRYON replied: 574,299 applications were considered during the period mentioned, 532,659 awards were made, and 41,640 claims rejected. The total expenditure for the regions incurred in administration during that period was 689,728.

The Committee on Adoption.

Sir JOHN BUTCHER asked the Secretary for the Home Department whether he had considered the Report of the Committee on Adoption; and whether he would soon be in a position to introduce legislation on the subject.—Sir JOHN BAIRD replied: The report of the Committee referred to which was issued last month is receiving consideration, but I am not yet in a position to make any statement as to legislation.

Medical News.

UNIVERSITY OF CAMBRIDGE.—At examinations held recently the following candidates were successful:—

THIRD EXAMINATION FOR MEDICAL AND SURGICAL DEGREES.

Part I., Surgery, Midwifery, and Gynæcology.—G. F. Abercrombie, A. C. Ainsley, F. Allen, S. H. Barnett, C. C. Beney, E. M. Burrell, W. R. Carling, C. N. Carter, A. O. Courtis, D. Crawford, C. Dunscombe, D. D. Evans, L. E. Frazer, H. J. H. Hendley, R. C. Hewitt, B. E. Jerwood, A. V. Johnson, P. B. Kittel, R. B. P. Lansdown, S. Orchard, E. S. Orme, F. A. Phillipps, J. H. Porter, W. Shaw, G. W. Theobald, G. I. F. Tweedie, D. C. L. Vey, J. P. Wells, C. E. Whitting, C. H. Whittle, and H. L. Willey.

Part II., Medicine, Pathology, and Pharmacology.—A. C. Ainsley, A. E. Clark-Kennedy, B. K. T. Collins, H. T. Cubbon, E. Donaldson, N. D. Dunscombe, V. N. Fenton, E. A. Fiddian, C. I. C. Gill, W. S. Gross, E. A. H. Grylls, G. Habgood, A. T. Hawley, E. C. Malden, L. B. Maxwell, R. A. Olphert, W. H. Palmer, H. A. A. Pargeter, F. A. Phillipps, P. W. Putnam, W. Raffle, A. P. Saint, W. Shaw, T. H. Somervell, E. D. Spackman, H. N. Stafford, R. A. P. Starkie, S. D. Sturton, G. W. Theobald, G. D. C. Tracy, R. R. Traill, Y.-S. Wan, and C. H. Whittle.

EXAMINATION FOR DEGREE OF M.CH.

J. B. Hunter.

UNIVERSITY OF LONDON.—At a meeting of the Senate held on June 22nd Sir Sydney Russell-Wells, M.D., was re-elected Vice-Chancellor for the year 1921–22.

Grants were made out of the Dixon Fund for the year 1921–22 as follows: Mr. F. J. F. Barrington, M.B., B.S., for research on the nervous mechanism of micturition. £50. Mr. E. J. Evans, B.Sc., for researches on the nature of the discharge in an X ray tube with a static machine as source of potential, £15. Prof. J. P. Hill, D.Sc., F.R.S., for researches on the development of Mammalia, more particularly of the Primates, £40. Miss G. Z. L. Le Bas, B.Sc., for researches into the part played by lipoids in immunity and bacteriological intoxication, £40. Mrs. M. M. Neilson-Jones, D.Sc., for researches on mycorhiza and the physiology of heterotrophic nutrition in flowering plants, £50. Prof. Karl Pearson, M.A., F.R.S., to defray the cost of the publication of drawings of the sesamoid bones of the knee-joint to be used to illustrate a memoir on the subject now in progress, £50. Mr. J. W. D. Robinson, M.Sc., for geological research on the palæozoic beds of south-east England and north France, £30. Mr. D. M. Shaw, to enable him to apply and demonstrate his special "Theory of Maximum Shear" in the functional interpretation of specific tooth-shapes and the normal physiological mechanism and interactions of teeth, especially the teeth of man, £45. Mr. H. G. Smith, B.Sc., for investigation of the Basic intrusions of Central Wales, £51. Miss D. M. Wrinch, D.Sc., for researches on the morphological significance of nodal points on the branching of trees, £50.

The following appointments were made: The Vice-Chancellor (Sir Sydney Russell-Wells), the Principal Officer (Sir Cooper Perry), Dr. H. C. H. Carpenter, F.R.S., and Prof. E. A. Gardner to be Governors of Birkbeck College. Miss E. C. Higgins to be Governor of Grey Coat Hospital. Mr. S. L. Loney to be Member of the Surrey Education Committee. Sir Sydney Russell-Wells to be representative at the Conference of the International Union against Tuberculosis to be held in London in July, 1921. The Scholarships Committee reported the appointment for 1921-22 of Mr. E. C. Warner, of Guy's Hospital Medical School, to the University Studentship in Physiology of the value of £50.

UNIVERSITY OF MANCHESTER.—Alderman Henry Plummer, a member of the Court of Governors and of the Council of the University, has contributed the sum of £1000 to the University Appeal Fund in commemoration of his golden wedding. The following have been recommended for the M.D. degree: Basil Browning, T. E. Dickinson, W. H. Kauntze, R. L. Newell, J. A. Panton (gold medallist), Harry Platt (gold medallist), and D. McK. Sutherland.

EPSOM COLLEGE.—The sixty-eighth annual general meeting of the Governors of Epsom College was held on June 24th, at 49, Bedford-square, London, W.C., Sir Henry Morris, the treasurer, presiding. The report of the scrutineers showed that the successful applicants for Pensionerships and Foundation Scholarships are: Pugh Pensionership, Mrs. Margaret Bromilaw; Christie Pensionership, Dr. Peter W. McGregor; Sir Thomas Smith Pensionership, Mrs. Celeste S. M. Orme; Foundation Scholarships, Frederick J. Brice, David Joy, John L. Newton, Philip M. Lawson, Spenser G. F. Penny, Eric R. Bent, James D. Shoolbread. In moving the adoption of the report the treasurer referred to the great loss which the College had sustained in the death of Sir Frederick Taylor, who had been for over 30 years an active member of the Council, and for many years had held the offices of chairman of the School Committee and honorary physician. He thanked friends of the College who had responded to the Council's application to take Mortgage Debenture Bonds of £100 at 5 per cent. interest, and stated that £20,200 of the Debentures had been allotted to date. As a result the Council had repaid the £14,000 owing on Mortgage, and had liquidated the greater portion of the debt to the bankers. This debt was incurred owing to the greatly increased cost of maintaining the school prior to the time when the higher school fees became payable, the provision of an annexe to the College infirmary, and the expense of entering upon new premises as a result of the expiration of the lease of the former London offices. The chairman further referred to the fact that the Epsom College scales of remuneration for assistant masters compared very favourably with the scales suggested in the Burnham report, and pointed out that the Council had instituted a non-contributory scheme of superannuation allowances for the masters which was far more generous than the contributory scale adopted 17 years ago. Schemes had also been instituted for providing pensions for other officials. The report having been adopted, formal business was transacted, after which a cordial vote of thanks to Sir Henry Morris was proposed by Sir William Church, seconded by Dr. P. W. Latham, and carried by acclamation.

DISTRICT NURSING OF INSURED PERSONS.—Considerable discussion is taking place as to the nursing of insured persons in their own homes, and as to contributions to nursing associations by approved societies. The voluntary organisations for these purposes may receive contributions from the societies, either under their statutory powers under paragraph 20 of the Act of 1911 or by way of additional benefits out of their surplus funds. The Central Council for District Nursing in London (Chairman, Sir William Collins; Chairman of the Executive Committee, Mr. E. B. Turner) in April last informed those approved societies with members resident in London that the Council was in a position to arrange for adequate nursing for all such members, and invited the societies to make contributions in aid of this work. The Ministry of Health, in a circular issued to approved societies, contemplates sanctioning schemes for bringing into operation additional benefits in the course of next month, and is prepared to furnish societies with model draft schemes to that end. Among additional benefits suggested by the Ministry is provision of a nursing service for members of the societies, for which purpose a separate fund may be set aside. Lord Cave's Committee's report on the voluntary hospitals, while recognising the complete freedom of discretion of the approved societies in granting financial aid in respect of

insured persons to voluntary hospitals, appears to favour a contribution or donation in recognition of such services to their members, rather than any scheme of insurance by payment in advance (with its contractual implication), or compulsory payment afterwards in respect of service rendered. Here, again, the case of the District Nursing Associations is analogous with that of the voluntary hospitals in relation to insured persons or approved societies, and any scheme of financial aid to the one may be applied to the other.

SOCIETY OF MEDICAL OFFICERS OF HEALTH: PROPOSED MIDLAND TUBERCULOSIS SUB-GROUP.—A meeting for medical officers working in tuberculosis in the Midlands will be held on Saturday, July 9th, at 3 P.M., at the tuberculosis dispensary, 44a Broad-street, Birmingham, with the object of considering the advisability of forming a Midland Tuberculosis Sub-Group. Dr. G. B. Dixon, chief T.O., of Birmingham, will attend. Those interested in the work of prevention and treatment of tuberculosis, whether members of the society or not, are desired to attend this meeting. If a sub-group is formed sub-group rules and election of officers will be considered.

ROYAL SANITARY INSTITUTE.—The Congress of the Royal Sanitary Institute, at Folkestone, passed off successfully last week. It evoked considerable interest, and was attended by upwards of a thousand delegates and members. Lord Radnor, the President, at the inaugural meeting on the Monday, dealt with the value of the voluntary services. Amongst the many topics discussed perhaps the milk question was one of the most prominent. The conference of veterinary inspectors made it clear that little progress has been made in the last 25 years in reducing the prevalence of bovine tuberculosis. Resolutions were passed for the encouragement of grade A milk and for the adequate control of methods of pasteurisation. Opinions were expressed that the only safe milk on the market at present for infants and little children, practically speaking, is dried milk. Grade A milk is not available, and pasteurisation may mean anything. Dr. Mellanby's popular lecture emphasised the need for a greater consumption of milk, showing that to double the national consumption of milk would be wise, and that there is room for all the "milk reformers'" efforts to get a safe milk. The deplorable state of the teeth of the nation received a good deal of attention at the Congress, and in this connexion the popular lecture aroused great interest, and most of those who attended the lecture were agreed that Prof. Mellanby and his wife have proved their case that by a change of dietary an enormous advance could be made at once in the present state of our knowledge not only in preventing rickets, but in securing good teeth.

A special section of the Congress dealt with the subject of Industrial Welfare, as essential to attaining a better spirit in the relations of capital and labour. The clarification of the air, as the result of the coal dispute, gave a stimulus to the discussion on smoke prevention, the remarks of the various speakers showing clearly how small was the effort throughout the country to tackle this problem.

Among other subjects dealt with there was an interesting discussion on the education of backward children, and another on the tests for mentally defective children.

The difficult question of housing received little attention, doubtless because at present this is regarded more as a problem for the statesman than for the sanitarian.

THE LATE COLONEL S. H. O'BRIEN BANKS.—The death occurred at Brighton, where he had resided since 1909, on June 15th, of Colonel Samuel Henry O'Brien Banks, F.R.C.S. Irel., late I.M.S., at the age of 79. A native of Ireland, his father was Dr. Henry Banks of Co. Wicklow, a well-known Irish physician, while Sir John Banks, Queen Victoria's physician in Ireland and Regius Professor of Medicine at Trinity College, Dublin, was his uncle. Samuel Banks studied medicine at the Carmichael College of Medicine, and the Richmond, Whitworth, and Hardwicke Government Hospitals, Dublin, and was the Carmichael Prizeman for two years. He took his degrees in 1865 and 1866, and in 1880 became a Member of the King's and Queen's College of Physicians and a Fellow of the Royal College of Surgeons, Ireland. The greater part of his medical career was spent in India. In 1866 he joined the Indian Medical Service, and in the following year sailed from Bombay for Abyssinia, took part in the campaign against King Theodore, and was present at the storming and capture of Magdala on April 13th, 1868. For his services he was awarded the Abyssinian medal. He subsequently held a number of important appointments in India. For some time he was a civil surgeon at Hyderabad, was Deputy Surgeon-General in Bombay, and served on the Bombay Government Council as chief medical member. He was also a magistrate for Bombay. He retired in 1896 on a well-earned pension with the rank of Colonel, and lost his only son in the second battle of Ypres.

FEDERATION OF MEDICAL AND ALLIED SOCIETIES.—The annual general meeting was held at 11, Chandos-street, London, W., on June 28th. In the unavoidable absence of the president, Sir Berkeley Moynihan, the vice-president, Sir Malcolm Morris, delivered the annual address. The annual report was read, and officers were appointed for the ensuing year. Thirty societies were elected to representation on the Executive Council, and after a ballot Dr. Ford Anderson was elected as a representative of individual members. The meeting of the Executive Council was held before the annual meeting, Sir Malcolm Morris presiding. A report was received from the Medical Council concerning the question of pressing for an inquiry into the medical provisions of the National Insurance Acts. The General Purposes Committee reported on a reference it had received regarding the publication of the news of the Federation, and it was resolved to issue a Journal, the arrangements being left in the hands of a special committee appointed for the purpose. The transfer of the offices to new premises, at 12, Stratford-place, London, W., was authorised.

LONDON FEDERATION OF INFANT WELFARE CENTRES.—The annual meeting was held at the Mansion House on June 29th. Sir Alfred Mond was present and spoke on the work of infant welfare centres as a whole. He said that he knew of no movement which had produced more immediately valuable results for relatively so small an expenditure as these centres. Whatever economies had to be made, and unfortunately we lived in an age of economy, he expressed the hope that the last direction in which economy would be attempted would be the curtailment of that important part of preventive medicine. Sir Alfred Mond added that the only true economists in the world were women, and he looked to women for guidance as to the extent to which it was possible to achieve more in the infant welfare movement without an increase in expenditure. Sir Arthur Stanley expressed satisfaction that after combining in their work for two years the British Red Cross Society and the Infant Welfare Organisations showed no tendency to drift apart, but rather to draw closer together.

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NATIONAL COUNCIL FOR COMBATING VENEREAL DISEASES.

THE sixth annual meeting of the National Council for Combating Venereal Diseases was held in the Barnes Hall, at the house of the Royal Society of Medicine, 1, Wimpole-street, W., on June 28th.

In the course of his Presidential address Lord GORELL said that during the past year branches of the National Council had been very active; there had been an increasing number of attendances at treatment centres, and the public was evidently realising the importance of continuous treatment. On the home side of the work, in one county alone lectures had been delivered to more than 30,000 people; in spite of criticism of this form of propaganda it was clear that much must be done by bringing home the facts of venereal disease to such a large number of people. Medical assistance must be accompanied by this method of going to the root cause of the evil. On the imperial side a substantial beginning of similar work was evident, and on the international side, whatever opinions might be held concerning the general utility of the League of Nations, there could be no doubts on the desirability of the work of the International Health Section, at whose recent Conference, held at Genoa, the National Council had been represented. The National Council, moreover, was now the recognised agent of all venereal diseases work carried on under the auspices of the Joint Committee of the Red Cross and the Order of St. John. When in May the Council met representatives of the Crown Colonies and of the seafaring trades all those who attended saw the necessity for amendment of the Merchant Shipping Act with reference to venereal diseases; and under the auspices of the Colonial Office, with the assistance of the Ministry of Health, three Commissions were despatched to the ports of the Empire to investigate the conditions obtaining there and to rouse public opinion in the matter.

Prof. WINIFRED CULLIS, of the Mediterranean Commission, speaking of the work done by that Commission at Gibraltar and Malta, expressed the feeling that here was an opportunity to repay a small part of the debt owing to the merchant service for its services during the war. The Commission had advocated "out-patient" facilities, whereby sailors might remain in their ships, but by carrying medical cards with them might obtain continuous treatment at successive ports of call, and "in-patient" treatment which would dispense with the hardship now attendant upon the seaman forced by illness to leave his ship. The establishment of out-patient departments was promised at both ports, and branches of the National Council formed; although prostitution is officially sanctioned at Malta there were signs that a change of policy might soon be made in that respect.

Dr. A. F. WRIGHT, of the Western Commission, emphasised the extraordinary temptations to which sailors are exposed at many ports, and the necessity not only of means of treatment on every ocean-going ship, but of special competence on the part of every ship's doctor to deal with venereal disease. The Commission met with different receptions in various West Indian islands; in some, where the population was comparatively large, conditions of public health were good, but in the poorer and smaller islands not only venereal diseases, but all forms of public health work were disgracefully neglected; and this was not altogether the fault of the medical profession. The lack of coördination between the islands, each of which had its own government, was productive of disastrous results; the whole tone of medical arrangements needed raising before venereal disease could be properly considered and treated. Many West Indian doctors were brilliant general practitioners, but there were apparently no experts in the whole of the West Indies, and the lack of laboratory arrangements, with the consequent almost complete neglect of bacteriology, together with the very urgent need for post-graduate instruction of men sometimes twenty years behind the times in medicine, rendered the state of affairs very serious.

Mrs. NEVILLE ROLFE, General Secretary of the Council and a member of the Eastern Commission, spoke of observing in the places visited a lack of recognition of the whole idea of public health vital from the social and economic points of view. At Hong-Kong the conditions of the port were such that it was miraculous that any seamen escaped venereal disease; even the vessels of the Navy could only with great difficulty be kept clear of women, and both there and at Singapore strong commercial interests had grown up which opposed every movement to prevent venereal disease on the score of interference with trade. At Colombo an efficient port administration protected the shipping; at Shanghai the procedure of government, consequent upon the status of the city as a Treaty Port, rendered legislation difficult to obtain, but the Chinese Chamber of Commerce had arranged to translate and print in Chinese many of the pamphlets issued by the Council; since the return of the Commission a venereal diseases specialist had been sent for, and a clinic was to be opened in the port.

The Chairman of the Executive Committee of the South African National Council for Combating Venereal Diseases, in proposing a vote of thanks to the speakers, spoke of the complications introduced into the problem in South Africa by the questions of race, language, and colour. Much propaganda work was done by pamphlets, but lecturers were hard to obtain. The Public Health Bill of 1919 had put an end to the recognition of prostitution. The meeting concluded with a vote of thanks to Lord Gorell, proposed by Mr. E. B. TURNER, and carried by acclamation.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Monday, July 4th, at 8.30 p.m.

Resumed Discussion (open) (the President, Sir John Bland-Sutton, in the chair) on

"The Problem of the Private Clinic System in Great Britain."

If thought desirable the following resolution may be moved:—

That in the opinion of this meeting the time is ripe for the formation of Group Clinics in this country, and that sympathetic encouragement should be given to them by the profession and by its governing bodies.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MEDICO-LEGAL SOCIETY, 11, Chandos-street, Cavendish-square, W.

THURSDAY, July 7th.—8.15 P.M., Annual General Meeting. Election of Officers and Council for Session 1921-1922. 8.30 P.M., Paper:—Prof. A. Louise McIlroy: Some Factors in the Control of the Birth-rate. Followed by a discussion.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, July 4th.—12.15 P.M., Dr. Burnford: Pathological Demonstration. 2 P.M., Mr. D. Armour: Operations. 2.30 P.M., Dr. A. Saunders: Demonstration of Cases (Medical Wards). 5 P.M., Lecture:—Mr. D. Armour: Diseases of the Gall-bladder and Ducts—Treatment.

TUESDAY.—10 A.M., Surgical Registrar: Demonstration of Cases. (Surgical Wards.) 12 noon, Mr. T. Gray: Demonstration of Fractures. 2.30 P.M., Mr. Addison: Visit to Surgical Wards. 5 P.M., Lecture:—Mr. Baldwin: Surgery of the Rectum.

WEDNESDAY.—12 noon, Mr. Sinclair: Surgical Diseases of the Abdomen. 2 P.M., Mr. D. Armour: Demonstration of Cases. (Surgical Wards.) Mr. Addison: Operations. 5 P.M., Lecture:—Dr. Simson: Sterility.

THURSDAY.—10.30 A.M., Dr. Simson: Gynæcological Demonstration. 12 noon., Dr. S. Pinchin: Diseases of the Heart. 5 P.M., Special Lecture:—Dr. L. Williams: Vitamins and Internal Secretions. (Open to all Medical Practitioners.)

FRIDAY.—10 A.M., Dr. G. Stewart: Neurological Demonstration. 12.15 P.M., Dr. Burnford: Applied Pathology. 2.30 P.M., Mr. Baldwin: Operations. Dr. Pritchard: Visit to Medical Wards. 5 P.M., Lecture:—Mr. Addison: Inflammation and Tumours of the Breast.

SATURDAY.—10 A.M., Medical Registrar: Demonstration of Cases. (Medical Wards.)

Daily:—10 A.M., Visit of Post-Graduates to Wards. 2 P.M., In-patient, Out-patient Clinics and Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, July 4th.—10 A.M., Mr. W. E. Tanner: Surgical Out-patients. 2 P.M., Dr. A. J. Whiting: Medical In-patients. 2.30 P.M., Mr. J. B. Banister: Gynæcological.

TUESDAY.—9.45 A.M., Lt.-Col. R. H. Elliot: Eye Operations and Cases. 2.30 P.M., Dr. J. Metcalfe: X Ray Department. 3 P.M., Lecture Demonstration:—Mr. C. H. Hayton: Cases illustrating Diseases of the Larynx (1) Inflammatory, (2) Destructive.

WEDNESDAY.—2 P.M., Mr. C. H. Hayton: Throat Operations. 2.30 P.M., Dr. W. J. Oliver: Dermatological. 3 P.M., Lecture Demonstration:—Mr. W. E. Tanner: Specimens illustrating Some Common Affections of Joints.

THURSDAY.—2 P.M., Mr. N. Fleming: Eye Department. 2.30 P.M., Mr. J. B. Banister: Gynæcological Operations. Dr. J. Metcalfe: Radiology.

FRIDAY.—2 P.M., Dr. C. E. Sundell: Diseases of Children. 3 P.M., Lecture Demonstration:—Dr. C. E. Sundell: Breast Feeding. Weaning. 5 P.M., Dr. Provis and Mr. Benians: Venereal Department.

SATURDAY.—10.30 A.M., Mr. W. E. Tanner: Operations. 3 P.M., Mr. H. W. Carson: Surgical In-patients.

UNIVERSITY OF LONDON.

The Semon Lecture will be given in the Lecture Hall of the Royal Society of Medicine, 1, Wimpole-street, W.

TUESDAY, July 5th.—5 P.M., Dr. W. Jobson Horne: The Relationship of the Larynx to Pulmonary Tuberculosis.

LONDON HOSPITAL MEDICAL COLLEGE (UNIVERSITY OF LONDON), Turner-street, Mile End, E.

SURGICAL UNIT.—A Special Course of Ten Lectures on Advanced Surgery in the Unit Theatre to Post-graduates and Senior Students.

TUESDAY, July 5th, and THURSDAY.—4.15 P.M., Mr. H. S. Souttar: Injuries of the Peripheral Nerves.

ST. MARYLEBONE GENERAL DISPENSARY, 77, Welbeck-street, Cavendish-square, W.

Post-Graduate Course on Infant and Child Welfare.

A Course of Twelve Practical Demonstrations on the Management and Feeding of Infants and Young Children by Dr. E. Pritchard to Qualified Practitioners.

TUESDAY, July 5th.—10.30 A.M., Demonstration VII., The Management of Difficult Cases.

THURSDAY.—3 P.M., Demonstration VIII., Treatment of Minor Ailments.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, July 7th.—4 P.M., Lecture:—Dr. F. Langmead: Pulmonary Tuberculosis.

TAVISTOCK CLINIC FOR FUNCTIONAL NERVE CASES, 51, Tavistock-square, W.C.

A Course of Ten Lectures on Elementary Psychotherapy, to be given by Dr. H. C. Miller, at the Kingsway Hall, Kingsway, W.C.

FRIDAY, July 8th.—5.15 P.M., Lecture X.: Herd Instinct and Herd Ideal; Mob Hysteria; Rumour.

Appointments.

DODD, H. G., M.B., B.S. Durh., has been appointed Honorary Anæsthetist, Royal Alexandra Hospital for Sick Children, Brighton.

HAIRE, N., Ch.M., M.B. Sydney, Clinical Assistant, Out-patient Department for Women and Children, London Lock Hospital.

SHEEN, A. W., M.S. Lond., F.R.C.S. Eng., to the new chair of Professor of Surgery in the Welsh National School of Medicine.

Certifying Surgeons under the Factory and Workshop Acts: THOMAS, T. P., M.R.C.S., L.R.C.P. Lond. (Brecon); ALLEN, E. H. C., M.B., B.Ch. Dub. (Clwt-y-Bont).

Vacancies.

For further information refer to the advertisement columns.

Barnsley, Beckett Hospital.—Sen. H.S. £300.
Bedford County Hospital.—H.S. £200. Asst. H.S. £150.
Birkenhead Borough Hospital.—Sen. H.S. £250.
Birmingham Education Committee.—Asst. Sch. M.O. £500.
Birmingham General Dispensary.—Res. M.O. £400.
Blackburn and East Lancashire Royal Infirmary.—Second and Third H.S.'s. Each £250.
Blackpool, Victoria Hospital.—H.S. £300.
Blyth Urban District.—M.O.H. and Sch. M.O. £800.
Bolton Infirmary and Dispensary.—Female Third H.S. £170.
Bristol, Royal Hospital for Sick Children and Women.—Hon. S. to Out-patient Department.
Carlisle Non-Provident Dispensary.—Res. M.O. £300.
City of London Hospital for Diseases of the Chest, Victoria Park, E.—H.P. £125.
Derby, Derbyshire Royal Infirmary.—H.S., H.P. Each £200.
Devonport, Royal Albert Hospital.—H.S. £200.
East London Hospital for Children and Dispensary for Women, Shadwell.—Cas. O. £120.
Evelina Hospital for Children, Southwark, S.E.—H.S. £160.
Fulham, Parish of.—Third Asst. M.O. £300.
Great Northern Central Hospital, Holloway-road, N.—Dental S.
Guildford, Royal Surrey County Hospital.—H.S. £150.
Halifax, Royal Halifax Infirmary.—Third H.S. £200.
Harrow-on-the-Hill Infant Welfare Centres.—Female M.O. of Baby Clinics. £1 11*s.* 6*d.* per session.
Hospital of St. John and St. Elizabeth, 40, Grove End-road, N.W.—Asst. S.
Huddersfield County Borough.—Asst. M.O.H. £500.
Ilford Urban District Council.—Dental S. £500.
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Liverpool, City of.—Asst. Res. M.O.'s at the Corporation Sanatoria. £300. Asst. Res. M.O.'s at the Corporation Infectious Diseases Hospitals. £250.
London Temperance Hospital, Hampstead-road, N.W.—Surg. Registrar. 40 guineas.
Manchester Children's Hospital, Pendlebury.—Res. M.O. £150.
Manchester Ear Hospital.—Hon. Asst. S. Hon. Radiologist.
Manchester Royal Infirmary.—H.S. to Special Depts. £50.
Margate, Royal Sea-Bathing Hospital for Surgical Tuberculosis.—Female Surg. £200.
Miller General Hospital for South-East London.—H.S. £150.
National Hospital for Diseases of the Heart, Westmoreland-street, W.—Pathologist. £250.
Newcastle-upon-Tyne City Mental Hospital, Gosforth.—Jun. Asst. M.O. £400.
Newcastle-upon-Tyne, University of Durham College of Medicine.—Demonstrator of Anatomy. £350.
Newport, Mon., Royal Gwent Hospital.—H.S. £200.
Nottingham General Hospital.—Res. Cas. O. £250.
Oxford, Radcliffe Infirmary and County Hospital.—H.S. £260. Res. Accoucheur. £200.
Portsmouth, Royal Portsmouth Hospital.—H.S. £150.
Queen Charlotte's Lying-in Hospital, Marylebone-road, N.W.—Asst. Res. M.O. £60.
Rochdale Infirmary and Dispensary.—Sen. H.S. £300. Jun. H.S. £200.
Royal Naval Medical Service.—Surg.-Lieuts. 26*s.* 6*d.* per diem.
St Bartholomew's Hospital, London, E.C.—Second Asst. in Med. Professorial Clinic.
St. Thomas's Hospital.—Clin. Asst. in V.D. Dept. £150.
Salford Royal Hospital.—H.S. Cas. H.S. Each £150.
Sheffield, East End Branch of the Children's Hospital.—Female H.S. £150.
Southampton, Royal South Hants and Southampton Hospital.—Jun. H.S. £150.
South-Eastern Counties of Scotland Joint Sanatorium Board.—Med. Supt. £600.
Stroud General Hospital.—H.S. £200.
Union of South Africa Government.—Asst. P.'s in Mental Hospital Service. £400.
University College Hospital.—Asst. Radiologist. £300.
Victoria Hospital for Children, Tite-street, Chelsea, S.W.—H.P. H.S. Each £100.
West London Hospital, Hammersmith-road, W.—P.

THE Chief Inspector of Factories announces the following vacant appointments: Milngavie (Dumbarton); Pitlochry (Perth).

Births, Marriages, and Deaths.

BIRTHS.

COOKE.—On June 18th at Berkshire Villa, Ventnor, the wife of Reginald T. Cooke, M.R.C.S., L.R.C.P., of a daughter.

EDMONDS.—On June 25th, at Manor House, Gleneagle-road, Streatham, the wife of C. J. E. Edmonds, M.R.C.S. Eng., L.R.C.P. Lond., of a son.

IEVERS.—On June 20th, at a nursing home, Sandgate, the wife of Brevet Lieut.-Colonel Osburne Ievers, D.S.O., R.A.M.C., of a daughter.

JAMES.—On June 3rd, at Mussoorie, India, the wife of Major J. F. James, I.M.S., of a daughter.

MARRIAGES.

BARTER—KIES.—On June 22nd, at St. Michael's Church, Stockwell, Lieut. J. A. Barter, R.N., to Pauline Kies, late L.M.S., Shanghai.

EDWARDS—JONES.—On June 25th, 1921, at Bryn Du (C.M.) Church, Llanfaelog, Anglesea, Thomas P. Edwards, M.D., B.S. Lond., D.P.H. Cantab, Ardwyn, Ruthin, N. Wales, to Eveline, daughter of the late D. H. Jones (of Carnarvon), and of Mrs. Jones, Morianfa, Rhosneigr, N. Wales.

MCEWAN—HART.—On June 22nd, at the Parish Church, Troon, George C. McEwan, M.B., D.P.H., to Ruth Margaret, younger daughter of the late Mr. Robert Hart and Mrs. Hart, Frognal, Monkton, Ayrshire.

DEATHS.

BELL.—On June 25th, at The Lindens, Torquay, William Riddall Bell, M.D., in his 86th year.

COW.—On June 23rd, at Redruth, Cornwall, Douglas Vernon Cow, M.D. Cantab., of Great Shelford and Cambridge.

WALLIS.—On June 26th, at Old Stone House, East Grinstead, Percy Evershed Wallis, M.R.C.S., L.R.C.P., aged 68

Notes, Short Comments, and Answers to Correspondents.

A STUDY OF THE NUTRITION AND ECONOMIC CONDITIONS OF WORKING-CLASS FAMILIES IN GLASGOW IN APRIL, 1921

BY ANNABEL M. T. TULLY, M.A.

(From the Department of Physiology, University of Glasgow.)

INTRODUCTION BY PROFESSOR NOËL PATON, M.D., F.R.S.

IN a paper published in THE LANCET of March 5th, 1921,[1] an account was given of an investigation of the condition of nutrition of the working classes in Vienna under post-war conditions. It was shown that the food consumed in 49 typical working-class families was far below that required by those engaged in manual work, and was insufficient to maintain normal growth in children.

It is of no little interest to compare the condition of these families with that of the poorer working classes in this country, under present conditions when unemployment is rife; and, in order to enable such a comparison to be made, Miss Tully has carried out a careful investigation upon 11 typical families in Glasgow. These families were neither better nor worse off than thousands of others round about them and the results may safely be accepted as giving a fair representation of the general condition of this part of the population. The fathers and mothers were generally steady and at least ready to face the right to work as a basis of the right to live.

The results recorded are sufficiently disconcerting. In considering them, it must be remembered that a man resting in bed expends energy at the rate of about 1700 calories per day; one leading an absolutely sedentary life expends some 2500 and, when working hard, some 4000 calories. The energy supplied in the food is not all available, some 10 per cent. is lost in digestion, so that, to supply 2500 calories net the food must contain 3000 gross.

In only two of the 11 families did the diet yield energy equivalent to 3000 calories, and this was obtained only by the expenditure of more than the whole income for the week on food—i.e., by borrowing, or selling, or pawning the family belongings. In six families only about 2500 calories were secured—i.e., about 2250 net—but again, only by over-expending the income on food or from charitable help. In three families the conditions were worse than in the majority of the Viennese families, the food yielding an energy supply of only between 1600 and 1800 calories (about 1530 net) per man per day. In seven of the families unemployment relief in some form was received.

Evidently, even when the demand for energy is reduced by the want of work, a supply of food yielding about 2500 calories must be got to maintain existence and in most of these families it is obtained by sacrificing expenditure on everything else. Some are unable to procure even this all too inadequate amount of nourishment.

THE STUDY OF DIETARIES.

During April, 1921, a study was made of the dietaries of 11 typical labouring class families in Glasgow, with the view of ascertaining the effect of the present trade depression upon their food consumption. A general strike of coal miners was in progress, and the fathers were either out of work or on short time. This is a continuance of the series of dietary studies carried by Miss Ferguson[2] upon the same class during the war, all of which form supplements to the more exhaustive study made in 1911–12 by Miss Lindsay.[3] The method of study and the source of the food analyses were those used by Miss Lindsay and Miss Ferguson. In each case the food was weighed and the waste collected for the period of a week as described in reference (2). The studies included 12 men, 11 women, 34 children under 10 years of age and 11 children over 10—68 persons in all.

To make the results of the various families comparable and to render a comparison with the previous observations possible, the food is expressed as that consumed per unit of population—i.e., per man per day, taking the requirements of women and children at the usual proportion of those of a man (Lusk's table).

Proportionate Food Requirements of Men, Women, and Children.

Males, above 13	..	..	..	1·0
Females, above 13	..	..	..	0·83
Children, 6 to 12	..	..	..	0·6
Children, below 6	..	..	..	0·5

Thus, a family of—					
Father	..	1·0	Boy (8)	..	0·6
Mother	..	0·83	Girl (4)	..	0·5

would correspond to 2·93 men. Three meals are taken as one day and meals taken outside are, of course, deducted.

In Table I. families are grouped according to income, above or under 8*s.* per man per week.

One of the docker's families (No. IV.) consented to a second study during May when the father was on strike and consequently receiving only £1 weekly from the Dockers' Union. A comparison of results is given in Table II.

As is seen from Table II., in this family in May more than double the weekly income was spent on food, and, as none of the weekly provisions were obtained on credit, the money to pay for these goods was raised by loans from friends.

The energy values differ little in the two groups, but in the poorer families a larger proportion of energy is got from carbohydrates.

TABLE I.—THE RELATION BETWEEN DIETS AND INCOME.

Families having over 8s. per Man per Week.

No.	Diet per man per day.				Income.					Number in family.			
	Calories.	Protein.	Fat.	Carbohydrate	Total income.	Per man per week.	Amount spent on food per man per week.	Per cent. of income spent on food.	Energy value purchased per 1d.	Males above 13.	Females above 13.	Children.	
												6 to 12.	Below 6
		gms.	gms.	gms.	£ s. d.	s. d.	s. d.						
I.	2789	72·0	83·4	418·5	1 15 0	11 11½	13 7½	114·3	125·0	1	1	1	1
II.	2070	55·1	61·6	310·5	1 17 3	15 10½	6 5½	*42·3	176·9	1	1	—	2
III.	1660	43·4	47·9	252·9	1 5 6	9 1½	5 5½	*58·8	176·3	1	1	1	1
IV.	2999	99·8	94·4	417·6	3 12 0	11 11½	8 5½	72·2	232·3	1	1	5	2
V.	2813	94·4	100·7	363·2	3 11 0	11 2	11 9½	105·8	158·6	3	1	3	1
Average	2466	72·9	77·6	352·5	2 8 1¾	12 0	9 1¾	—	173·8	—	—	—	—
Families having 8s. or under per Man per Week.													
VI.	3414	86·8	94·8	530·7	2 5 0	8 0	8 8¼	111·1	211·1	2	2	3	1
VII.	3039	75·1	92·4	456·7	1 10 0	6 10½	7 4	110·0	185·6	1	1	1	1
VIII.	2766	76·6	60·6	460·9	2 0 0	7 4	6 9¼	94·3	232·9	2	1	4	3
IX.	2426	64·9	73·1	359·1	1 5 0	5 8¾	5 6	98·6	248·8	2	1	3	1
X.	1610	30·9	57·6	231·1	1 3 6	7 10	4 1	*53·2	218·7	1	1	2	1
XI.	1775	50·0	61·2	244·1	0 13 0	5 6¾	4 3½	80·8	221·8	1	1	—	1
Average	2505	64·1	73·3	380·4	1 9 5	6 10½	6 1¼	—	219·8	—	—	—	—

* The small percentage of the income spent on food was due to the fact that a considerable amount was being paid in liquidating outstanding debts; the proportion of *available* income spent on food was much higher.

TABLE II.—RE-STUDY OF FAMILY IV.

—	Diet per man per day.				Income.				
	Calories.	Protein.	Fat.	Carbo-hydrates.	Total income.	Per man per week.	Spent on food per man. per week.	Per cent. income spent on food.	Energy value purchased per 1d.
					£ s. d.	s. d.	s. d.		
April ..	2999	99·8	94·4	417·6	3 12 0	11 11½	8 5½	72·2	232·3
May ..	2810	87·6	65·5	449·1	1 6 0	3 3¼	7 5½	228·7	215·6

These tables show—what has been emphasised in previous studies of the social conditions of the very poor—that food, the supply of energy, is the first charge upon income, that this must be provided and that all other expenditure must be subordinated to it. Under present conditions an adequate supply is impossible. Comparison of the present situation with that in previous years is given in Tables III. and IV.

TABLE III.—*Average Energy Value of the Diets.*

Date.	No. of families.	Energy in calories per man per day.	Protein in grms. per man per day.	Fat in grms. per man per day.
1911–12 ..	60	3163	110	83
1915–16 ..	40	3298	102	90
April, 1921 ..	11	2481	68	75

TABLE IV.—*Energy Value Purchased per Penny.*

Date.	No. of families.	Energy value(1d.)	Date.	No. of families.	Energy value(1d.)
1911–12 ..	60	453	Nov., 1917	8	264
1915–16 ..	40	350	Dec., 1919	5	210
Feb., 1917	10	274	April, 1921	11	198

In spite of careful marketing by most of the mothers, the energy purchasable per penny shows a marked decline from previous years. Nothing could more clearly indicate the serious effect of the present economic situation.

Housing.

Most of the families are living in very poor overcrowded quarters. The conditions may be briefly stated as follows:—

Group A.

Average number of rooms	1·4
Average number of inmates	5·8
Average air space per person	337 cub. ft.
Average rent per week	6s.

Group B.

Average number of rooms	1·5
Average number of inmates	6·5
Average air space per person	309 cub. ft.
Average rent per week	6s. 6½d.

Condition of the Children.

The economic depression has not lasted for many months and has hardly had time to tell upon the physical development of the children. The accompanying table (Table V.) shows their condition. Since malnutrition tells first upon weight, this alone is dealt with.

The children of only one family (VII.) reach the anthropometric standard weight. This family has been accustomed to better circumstances, and it is one of the families which had over 3000 calories per man per day. The others have been more or less constantly in financial straits. The average deficiency in weight below the anthropometric standard for Group A (14 children) is 13·4 per cent.; for Group B (16 children) 17 per cent.; for all (30 children) 15·9 per cent. In Miss Ferguson's[4] study in 1918 the deficiency was 13 per cent.

In conclusion, I should like to thank the students of the class of physiology who so kindly helped by visiting the families, and very specially Professor Paton for the assistance which he has given me.

Appendix of Family Histories.

1. Father, a labourer; has been out of work for months, but did a little work in February; in addition to unemployment money family get 15s. food tickets weekly from the Lord Provost's Fund; during study father got work as a night-watchman (£2 5s. weekly) but would not be paid till the following week. House is very clean; rent in arrears. Children quite healthy. Father suffers from bronchitis, the effect of mustard-gas poisoning. Mother not very strong—frequent headaches.

2. Father, a carter; unemployed for several months; has a pension of 17s. 3d. weekly. House clean though very bare. Greater part of income seems to go in repaying loans. During the study two pints free milk daily was granted by the Corporation. General condition of children is fair; baby is delicate and older child suffers from pains in the head, the result of a fall. The mother is thin and ill-looking; boils on her arms. Father is very deaf, owing to a wound received in the army.

3. Father, a carter; unemployed since Christmas. Family receive 10s. weekly food tickets from Lord Provost's Fund. Very poor home; all the furniture in pawn; relatives occasionally give assistance. Children all in fairly good health except one child (3 years), very pale and thin.

4. Father, a docker; until week of this study has had very little work, one or two days per week at most; 4½ days during study. House is rather untidy but quite clean. Children are rather delicate; two have rickets; child (4) has eruption on face; child (8) is lame owing to an abscess on leg. Mother is thin and unhealthy-looking.

5. Father, a docker; working only one or two days weekly; during week of study, 4½ days work. House and children are well looked after. Children quite healthy.

TABLE V.—WEIGHTS OF CHILDREN.

Families having over 8s. per Man per Week.

Family.	M.	F.	Total.	Average age.	Average % of Anthropometric Standard.† Above. M.	Above. F.	Below. M.	Below. F.	Above M. & F.	Below M. & F.
I. ..	2	—	2	3·87	—	—	32·7	—	—	32·7 %
III. ..	1	1	2	5·5	3·82	—	—	20·9	—	8·5
IV. ..	2	4	6	8·5	—	—	14·64	11·95	—	12·8
V. ..	3	1	4	10·5	—	1·73	14·16	—	—	10·2
Families having 8s. or under per Man per Week.										
VI. ..	3	2	5	8·6	—	—	19·26	19·0	—	19·2
VII. ..	2	1	3	8·6	1·1	17·74	—	—	+6·5	—
VIII. ..	2	4	6	6·6	—	—	19·25	11·86	—	14·3
IX. ..	3	1	4	10·5	—	—	14·7	21·8	—	16·5
XI. ..	—	1	1	1·25	—	—	—	10·8	—	10·8

M., male; F., female.

† The standard of the Anthropometric Committee's Report, 1883, is accepted as a convenient approximation to the normal.

Father not very strong; gastric condition. The mother suffers from rheumatism; pregnant meanwhile; four children dead.

6. Father, an engine-fitter; at present working half-time. Boy (16) unemployed since January. House is scantily furnished but clean. General condition of children is poor; two suffer from skin disease; child (3) has just recovered from pneumonia and bronchitis. The mother has sores on her face.

7. Father, a hairdresser; unemployed eleven weeks. Family get 10s. food tickets weekly from Lord Provost's Fund. House is well furnished and clean; rent in arrears. General condition of children is quite good; boy (7) has rickets; baby is rather delicate. Father has a bad cough; he was in a Mental Hospital for some time last year.

8. Father, a labourer; only worked two weeks this year and during the past year has been continually unemployed; during this study he got work but was not paid till the following week. Family get two pints free milk daily from the Corporation; five children get dinner in school. A relation lives with them—gives £1 weekly for board. Children quite healthy except baby, who is frequently ill. Mother delicate—rheumatism and anæmia.

9. Father, a steel erector; unemployed since Christmas. Family receive 5s. food tickets weekly from Lord Provost's Fund; 2¼ pints free milk daily from the Corporation; five children get dinner in school. The children look healthy, although child (7) has rickets and youngest has whooping-cough. Mother is pregnant.

10. Father, a labourer; unemployed since Christmas; not receiving unemployment benefit. Family have been getting food tickets from the Lord Provost's Fund but none during the week of this study. Mother chars a model lodging-house. House is kept very clean by the father. General condition of the children is fair; child (7) just back from hospital—whooping-cough and pneumonia; baby is very delicate.

11. Father, a carter; unemployed since October; not receiving unemployment benefit. Family gets 5s. food tickets weekly from Lord Provost's Fund. House in a filthy condition; rent in arrears; ejection notice received Father ill—chest trouble. Father and child are ill-nourished.

References.—1. Miss Gribbon and Miss Ferguson: THE LANCET, 1921, vol. i. p. 474. 2. Miss Ferguson: Proceedings of the Royal Society of Edinburgh, vol. xxxvii., p. 117. 3. Miss Lindsay: Report upon a Study of the Diet of the Labouring Classes in the City of Glasgow, 1911-12. 4. Miss Ferguson: Journal of Hygiene, 1920, vol. xviii., p. 413.

PUBLIC HEALTH AT CAPE TOWN, 1919-20.[1]

AT the commencement of his annual report for the 12 months ending June 30th, 1920, Dr. A. Jasper Anderson, medical officer of health for the city of Cape Town, expresses a hope that a complete census of the Union of South Africa and its municipalities will be taken during the present year, 1921, and meantime estimates the population of the city at 188,000, of whom 100,000 are Europeans. On this basis the general birth-rate was 35·56 per 1000, compared with 31·86 in 1919, and 35·44 in 1918; and the death-rate 18·87, compared with 45·86 and 20·92 in the two years preceding, the large excess in 1918-19 having been due to the influenza epidemic in October, 1918. If corrected for deaths of persons whose homes were outside the city, the ratio becomes 17·24, compared with 42·38 and 18·69 in the two previous years. The general death-rate for Europeans (12·42) may be compared with that for London in 1919, which was 13·4 per 1000. The infant mortality ratio (which Dr. Anderson states to be the most reliable rate in the report, and "as to some extent a rough index of the sanitary condition of a district") was 145·40 per 1000 births; for European children it was 81·57, for non-Europeans, 183·24; the corresponding ratios (for all classes) in 1919 were 224·37 and in 1918 152·18. There was great variation in the different wards of the city, due, no doubt, to the density of population and sanitary conditions. Thus, among European children, the highest ratio was 113·63 in West Central ward, while in Kalk Bay, Sea Point, and Park wards the ratios were only 30·77, 35·71, and 36·20 respectively. Among non-Europeans in Sea Point the ratio was 85·10, in Park ward it was 113·82, and in every other ward the ratio was higher than this. In five wards the ratio was 200 or over, Salt River being the worst, with 231·21 infantile deaths per 1000 births. The chief causes of this excessive infantile mortality were pneumonia (148 deaths), diseases of the stomach (139), premature birth (123), and bronchitis (106).

The Public Health Act, of June 24th, 1919, came into operation on Jan. 1st, 1920, repealing previous Acts and extending the scope of notification, inspection, &c. There was not a single death from small-pox in the city during the year (only three cases were notified); nor was there any especial zymotic mortality, with the exception of diarrhœa and dysentery (137 deaths), and "enteric and continued fever" (68 deaths). The total zymotic death-rate was 1·55 per 1000, and for Europeans only, 0·78 per 1000. If corrected for deaths of non-residents, these ratios are respectively 1·46 and 0·69, the corresponding ratios for the previous year having been 1·41 and 0·59 per 1000. There were 501 cases of typhoid fever notified, as compared with 444 in the previous year; 283 were Europeans, giving a ratio of 2·83 per 1000 of the population; among non-Europeans this ratio was 2·36. The case-mortality was 9·93 per cent. among Europeans, and 23·7 per cent. among non-Europeans. Salt River ward (96 cases) and Woodstock ward (76 cases) were the wards most affected. Diphtheria was more prevalent than in the previous year (176 cases compared with 145), the disease being introduced from oversea: 139 cases were among Europeans. The death-rate was 0·1 per 1000 for Europeans and 0·14 for non-Europeans, the case-mortality being 9·35 and 32·43 per cent. respectively. Woodstock and East Claremont were the wards chiefly affected. There was also much more scarlet fever in the period under report (308 cases) than during the previous 12 months (179 cases); the type was mild, only four cases having been fatal. Eleven cases of leprosy were notified, of which two were Europeans; the disease was contracted outside the city in all but three cases. There was a slight decrease in tuberculosis notifications (689), as compared with those of the preceding year (709). East Central and Castle wards furnished the largest numbers (112 and 92). It is stated that the only accommodation now available for tuberculous patients consists of ten beds for each sex in the City Hospital, these cases being no longer admitted into the Old Somerset or the General Hospitals. Patients remaining at home are visited fortnightly by the female sanitary inspectors. The need for further hospital accommodation appears to be most urgent. The European death-rate for tuberculosis was 0·9, and for non-Europeans 3·76 per 1000; if corrected for non-resident fatal cases, these ratios become 0·8 and 3·46 respectively; for the population as a whole (all classes) the ratios were 2·24 and 2·04 per 1000. A very important and beneficent work is carried on by a staff of "sanitary inspectresses," under the direction of the medical officer of health. Their chief duties are to advise mothers, investigate deaths of young children, pay fortnightly visits to cases of tuberculosis; also to visit puerperal fever cases, and indigent cases of confinement. A total of 18,651 visits were made during the year under review. Dried milk is supplied for infants who cannot be breast-fed, lactogen having been found to meet requirements in most cases. Amongst other items of interest mentioned in this report, it is noted that the supply of water to the city was restricted from Oct. 29th, 1919, to May 24th, 1920, on account of the reservoirs provided not being large enough to store the quantity of water needed by the inhabitants; also, the rainfall was the lowest recorded for 26 years. A further supply is in course of being provided by the Steenbrass scheme. There are five districts where the pail system is still in force, with only a weekly collection free of charge; but a drainage scheme for these districts "is being rapidly proceeded with." Mosquito prevention and rat extermination are also systematically carried out.

[1] Annual Report of the Medical Officer of Health for year ended June 30th, 1920.

VITAL STATISTICS FOR 1920 OF NON-NATIVE OFFICIALS IN WEST AFRICA.

THIS command report, recently issued by the Colonial Office, shows that a considerable advance towards normal conditions in West Africa has been made during the year under review, and that the staffs generally have been brought up to their full establishment. Over 800 appointments were made in 1920, giving a net increase during the year of 439, and bringing the staff at the end of the year to the highest figure it has ever reached. The death-rate rose from 12·5 in 1919 to 16·3 in 1920—a rise partly due to an exceptional number of deaths from accident (including one death from ptomaine poisoning), or by suicide, these causes accounting for eight out of the total deaths in the year. There remain 36 other deaths due directly to disease, giving a rate of 13·3 per 1000 as against 11·6 per 1000 in 1919. There was one death during the year from malaria, and none from yellow fever. The causes of death during the year were as follows: 11 blackwater fever (accompanied in four cases by uræmia), 2 uræmia, 2 paratyphoid fever, 1 typhoid fever, 3 pneumonia, 1 capillary bronchitis, 3 heart failure, 1 cerebral malaria, 1 dysentery, 1 Bright's disease, 1 arthritis, 1 acute mania, 1 acute meningitis, 1 phthisis, 1 paralysis, 1 purpura variola, 1 gastro-enteritis, 1 acute ulceration of intestine, 1 myocarditis and dilatation of heart, 1 hepatitis, 1 ptomaine poisoning, 3 accidents, 4 suicides. Of these deaths 31 occurred in West Africa, 9 in the United Kingdom, and 4 at sea.

The invaliding rate shows a considerable improvement, having fallen from 27·5 per 1000 in 1919 to 22·7 per 1000.

The rate for 1920 is little higher than that for the record years 1916 (22·1 per 1000) and 1917 (20·5 per 1000), and the general downward tendency of the invaliding rate has been well maintained. There were 21 officers pensioned during the year on completing full qualifying service against 15 in 1919, and the number of officials over 52½ years of age at the beginning of 1920 rose to 73 out of a total of 2467, against 59 out of a total of 2305 in 1919 and 48 out of a total of 2634 in 1918. Officers described as "pensioned" have been for not less than seven years in the West African service except in a very few cases of transfer from pensionable appointments elsewhere.

NATIONAL CHILDREN ADOPTION ASSOCIATION.

To the Editor of THE LANCET.

SIR,—This Association has for some years carried on its work of promoting the adoption of children and providing homes for children, the circumstances of whose birth appeal to the Association for assistance. The Association's Hostels are at Tower Cressy, Campden Hill, W., Addison House, Holland Park, W., and Southampton. By a recent publication in the press on the subject of 15 children having been sent to America with a view to adoption by a society known as the National Adoption Society much hostile criticism and correspondence has been evoked and has reached our Association through the fact that the correspondents have mistaken the one institution for the other. This confusion has frequently meant unnecessary complication and correspondence.

The National Children Adoption Association has nothing to do with the National Adoption Society, nor does the Association encourage sending children out of this country before the adopting parents have actually seen the children in England and have themselves been interviewed by our Case Committee. Our Association has been criticised because of its supposed action in this matter, especially in view of the fact that the children are stated by the press to have been sent out to America with first-class accommodation, giving the impression that the Association has unlimited funds. That is not the case. The friends of our Association know only too well that, on the contrary, we find it extremely difficult to undertake all the adoption work we could if our income were not so limited.

Possibly we can help to establish the identity of the National Children Adoption Association by stating that our patrons are H.R.H. Princess Alice, Countess of Athlone, and S.A.I. La Princesse Victor Napoleon, and its founder, and now one of its hon. directors, is Miss Clara Andrew.

We are, Sir, yours faithfully,

MARY A. ABERCORN,
Dowager Duchess of Abercorn, Chairman of Appeal Committee.
HELEN FRANKLYN,
Lady Franklyn, Chairman of Case Committee.
BEAUMONT H. COMERFORD, M.D., D.P.H., M.R.C.S.,
Chairman of Nursing Committee.
REGINALD NICHOLSON, M.P.,
Chairman of Executive Committee.
GLADYS SWAYTHLING,
Lady Swathling, President of the Southampton Hostel for Mothers and Babies.

June 21st, 1921.

THE S.A. IMPULSE STARTER FOR MOTOR CARS.

THE medical man on a strenuous professional round may well be glad to forgo much of the fatiguing, if healthy, exercise of cranking the engine to start the motor. Most modern cars have a so-called "self-starter" fitted. To adapt one to a car, which is minus this fitting, is rather costly, so an inexpensive compromise, the S.A. Impulse Starter, which has been put on the market by Messrs. Brown Brothers, Ltd., of Great Eastern-street, London, will appeal to those who desire a simple contrivance which amounts almost to a "self-starter." The contrivance in question is a device which fits in the magneto coupling, and gives the armature a sharp initial movement, thereby causing a powerful spark at the exact moment required when starting the engine. By pulling a pawl into engagement with the armature plate attached to the armature spindle the magneto armature is temporarily arrested, and a spiral spring inside the starter is wound up. The energy thus stored up, when the cam on the cam casing disengages the pawl, causes a rapid impulse to the magneto armature, equivalent to revolving it at the rate of 500 revolutions per minute. Thus an intense spark at the plug in the cylinder which is on the firing stroke is provided. If the engine has been primed by squirting a little petrol or startol in the cylinders previously, the engine immediately starts. It might start without the priming, but it is as well to make sure by applying the dope. Directly the engine revolves under its own power the pawl is thrown out of operation, and the design is such that it is impossible for the Impulse Starter to come into operation after the engine is running. It can be easily fitted to any car that has magneto ignition.

A NEW RIMLESS PINCE-NEZ.

TWENTY years ago Messrs. Frederick Bateman and Co. submitted to us the Usebius pince-nez frame, in which any disagreeable pinching effect upon the nose was avoided by the device of a stop nut on a screw thread arranged to take part of the tension of the spring. The same firm has now sent us a specimen of their new Winner mount, which is exceedingly light in weight and appearance, and embodies a further improvement. The nose-piece contains a hidden spring which, whenever the ordinary tension is relaxed, emerges from its cell and adds just sufficient grip to prevent the glasses falling off under unusual conditions. They are especially suitable for work where the head is in rapid movement or held out of the vertical line. We have tried the mount which is comfortable and gives a feeling of security. The head office of the maker is 55, Berners-street, London, W. 1.

THE CHEMISTS' EXHIBITION.

THIS exhibition, the twenty-second of its kind, was held from June 20th to 24th, at the Central Hall, Westminster. The general arrangements were highly creditable to the *British and Colonial Pharmacist*, the proprietors of which are the organisers. Primarily, the exhibition was intended for pharmacists and others associated with the retailing of pharmaceutical goods, but nevertheless it was full of interest to the general public. Most of the well-known manufacturers of fine chemicals exhibited, and it is gratifying to be able to record that many of the products displayed have only recently been successfully manufactured in England. Among these aspirin, thymol, vanillin, benzyl benzoate, citronellol, and others were noticed. Sundries such as perfumes, sponges, brushes, soaps, and surgical dressings formed an important part of the exhibition.

AN IMPROVED RUBBER SHEETING.

WE have received from Messrs. Louis Minton, of Trevelyan Buildings, Manchester, specimens of their red and white rubber waterproof sheeting. This fabric, which has received the name of "Minite," is prepared by mixing the rubber with powdered mica, the same mineral being used as a surface finish. On trial we find that acids and heat have little or no effect upon the material, which, we are assured by the manufacturers, does not crack after prolonged use. The process is applicable to many rubber productions, including jaconet, and surgical appliances where surface protection is necessary.

A THIMBLE TOOTH-BRUSH.

Mr. W. S. Benson, of 53, Lord-street, Liverpool, has sent us samples of a hygienic tooth-brush which he has designed and called the Wedge-rub. It consists of an indiarubber thimble to be worn on the finger which it best fits. Tooth-paste or powder is applied on the roughened surface of the thimble, which is then rubbed up and down on the teeth and gums. A thin rubber wedge on the thimble is intended to clean the intervals between the teeth. The inventor claims the following advantages for his device: cleanliness, no bristles to become loose, suitability for tender gums, durability, and portability. Certainly a couple of these thimbles might conveniently be put in the sponge-bag for a journey.

BOOKS, ETC., RECEIVED.

BLAKISTON'S SON, P., Philadelphia.
Introduction to General Chemistry: An Exposition of the Principles of Modern Chemistry. By Prof. H. Copaux. Translated by H. Leffmann, M.D. Pp. 195. $2.00.

HARRAP, GEORGE G., AND CO., London.
Trade Tests. By J. Crosby Chapman, D.Sc. With the assistance of Daisy R. Chapman, M.A. Pp. 435. 15*s*.

LIPPINCOTT, J. B., COMPANY, London.
Gynecology. By B. M. Anspach, M.D. With an introduction by J. G. Clark. Pp. 752. 42*s*.

MALOINE, A., AND FILS, Paris.
Traité de Pathologie Médicale et de Thérapeutique appliquée. Publié sous la Direction de Émile Sergent, L. Ribadeau-Dumas et L. Babonneix. Tome XIX. Syphilis (Tome I.) Généralités et syphilis de l'Adulte. Par MM. Clément Simon, Rostaine, Bellin, Mirande, Favre, Babonneix. Affections vénériennes non syphilitiques et non blennorrhagiques. Par M. J. Du Castel. Pp. 595. Fr. 28. Tome XXXI., Electrologie. Par Delherm et Laquerrière. Pp. 324. Fr.18.

ROUTLEDGE, GEORGE, AND SONS, London. DUTTON, E. P., AND CO., New York.
Insanity and Mental Deficiency in relation to Legal Responsibility: A Study in Psychological Jurisprudence. By William G. H. Cook, LL.D. Lond. Pp. 192. 10*s*. 6*d*.